

CACTUS AND SUCCULENT JOURNAL

VOL. XXXIII MAY-JUNE, 1961 No. 3

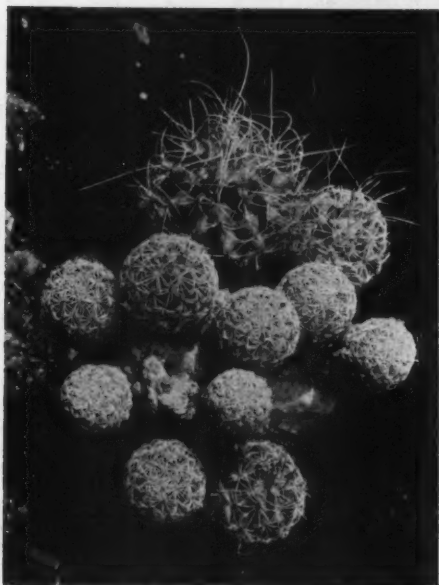
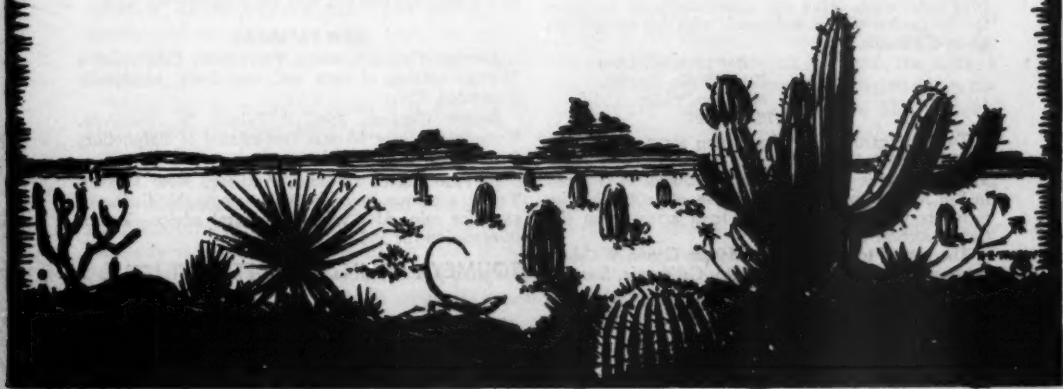


Fig. 26. *Toumeyia krainziana* Frank
(See pg. 66)



CACTUS AND SUCCULENT JOURNAL

Published and owned by the Cactus and Succulent Society of America, Inc., 132 W. Union St., Pasadena, Calif. A magazine to promote the Society and devoted to Cacti and Succulents for the dissemination of knowledge and the recording of hitherto unpublished data in order that the culture and study of these particular plants may attain the popularity which is justly theirs. North and South America \$4.00 per year; foreign \$4.00 by money order. Mail application to SCOTT HASELTON, Editor, 132 West Union Street, Pasadena, California. Editorial Staff: The Entire Society. Mailed as Second Class, postage paid at Pasadena, Calif. Published bi-monthly and mailed about the 20th of every other month.

VOL. XXXIII

MAY-JUNE, 1961 (Price 75¢)

No. 3

CONTENTS

Desert Flowers Under Glass	Marjorie E. Shields 67
Questions and Answers	Harry Johnson 70
Succulent Display in Israel and Sweden	Herman F. Becker 71
Interesting Succulents, <i>Crassula socialis</i>	J. R. Brown 73
New Bolivian Cacti, Part VII	M. Cardenas 74
Our Mexican Diary, Part II	Hazel Johnson 80
Notes on Haworthias	J. R. Brown 86
Cultivated and Native Agaves in the Southwestern United States	August J. Breitung 88
The New York Cactus and Succulent Society Show	Joseph Emma 91
Spotlight on Round Robins	Mrs. Gladys H. Panis 92
Cereus Speaking	John E. C. Rodgers 94
Spine Chats	Ladislaus Cutak 93

MADAM GANNA WALSKA TRIP

June 11th. 12:00 noon, at entrance gate. Rules follow: No pets. Children must be controlled, not allowed to run around the grounds. No eating inside grounds. No tripods; no entering beds to take pictures. No cars allowed on grounds. Parking must be outside. Gate does not open until crowd is on hand. Bags must be carried for keeping all litter in hands of one making it—such as knick knacks and papers, flash bulbs, cigarettes and cigarette packages—and such.

Directions for getting there: Pacific Coast Highway, north past Summerland; becomes freeway here. At Montecito turn-off, on right, leave freeway, go north one block to Richfield Station. This is Middleroad. Turn right; keep going until you reach Sycamore Canyon Road, Highway 150. North on this to Ashley Road. Main entrance to Lotusland is on Sycamore, enclosed by a stucco wall. Meet at the gate. Members and affiliated members welcome at both affairs. Not open to public.

DON B. SKINNER, *Chairman*

FROM ROAD RUNNER DISTRICT

Our Community has begun an enterprise of a Palm Wells Community Cactus Garden, under the sponsorship of the local Garden Club and the Chamber of Commerce, a yearly event is held, known as Cactus Days, on the third Sat. and Sun. in Sept. This year it falls on the 16th and 17th. A flower show is held at which Cactus and other Succulents are featured. This is mentioned, just in case news of this type is used in your publication. Also, any contributions of specimen for the garden will be welcomed, with due recognition given the donor.

PAULINE W. EADS
Palm Wells, Star Rt.
Morongo Valley, Calif.

PRESIDENT'S REPORT

Two fine garden tours have been arranged by Don B. Skinner, Chairman of Special Events of the Society. The first tour is to the Huntington Botanical Gardens in San Marino, on May 21st, where, at 1:00 P.M. the members will meet under the trees across from the Cactus section of the garden.

The second tour will be to Madam Ganna Walska's famous "Lotusland" in Montecito, California, Sunday,

June 11th right after lunch. Full directions will be found elsewhere in this Journal. Lets have a fine turnout for both of these tours.

We are looking forward to a fine time in Mexico July 12 through 17th. Will you be there to share the fun? There were not as many reservations received as we had hoped for but there is still time, up until June 1st to get yours in. The hotel has extended the time till then for those who are a little late. We need more reservations so rush your money in and join us in our first foreign convention.

EDWARD S. TAYLOR, *President*

OUR MEXICAN DIARY

The second part of this article by Mrs. Harry Johnson (Hazel Johnson) is concluded on pgs. 80-86. Did you ever make a long trip and take full notes along the way or write them up at the end of the day when you are weary and writing conditions are far from comfortable? Mrs. Johnson deserves much credit for this interesting travelogue which will inspire others to travel in the land of cacti.

BINDING JOURNALS

There will be a delay in binding Journals, all of which are in safe keeping. So few were returned for binding that it may not be practical to bind at this time and if by summer we cannot go ahead, we will refund and return the Journals. After we work with the Journals salvaged after the fire, we will be able to fill back orders and proceed with the binding—we hope.

NEW CATALOGS

Johnson Cactus Gardens, Paramount, California: a 36-page catalog of cacti and succulents, beautifully illustrated, 25¢.

Beahm Gardens, 2686 E. Paloma St., Pasadena, California: a new 36-page free catalog of Epiphyllum Species and their hybrids.

El Paso Cactus Gardens, Anthony, New Mexico-Texas: a unique, spiral-bound photographic listing of cacti for sale. Also valuable cultural advice—lots of information for 35¢.

TOUMEYA KRAINZIANA SEE NEXT ISSUE

DESERT FLOWERS UNDER GLASS

The story of my experiences and delight in growing and flowering Cacti and Succulents in a small glasshouse in Christchurch, New Zealand

By MARJORIE E. SHIELDS

Chapter 21

ECHINOCEREUS

When I first started collecting cacti I was advised to buy all the Echinocereus I could if I wanted beautiful flowers. I followed this advice and how glad I am today. They occupy the position of honour, the end of the centre bench where they receive all the sun that shines, and then, waited for the coming of the flowers. I did not wait in vain. Out of 31 mature plants, four only have failed to produce a blossom, yet so many say they are difficult to flower! Not only are the flowers really lovely, the plants themselves are interesting, some falling naturally into groups. Look at the similarity between these with the elongated sausage-like bodies, and these about to form tails like an Aporocactus, and these with the pectinate spines, and those over there with the plump, soft bodies and masses of spines. Others again resemble no other at all, they are solitary plants—at least so far—while the majority are quickly forming clusters. It is usually understood all the flowers are large, but this is not so, as they range from half an inch in width to five inches or more. Of the many colours, pinkish purple predominates. A strange characteristic is that the offshoots are deep seated. They do not appear at an areole as in most cacti, but break through the body, not merely as a pin point, but as quite large shoots complete with spines.

As mealy bugs and red spider are particularly partial to them, they must be watched closely and the spray gun kept in use. Repotting frequently and keeping the plants growing with plenty of water during the summer, will help to keep the pests at bay. It is essential to keep them dry during winter, the tender ones especially. As they are found over a very wide range of North America, in the western states and Mexico, in deserts and on mountain sides, some are hardy and others very tender, but all revel in bright sunshine.

There are so many of them it is difficult to know where to begin. First, this little one is intriguing, *E. knippelianus*, there is no other similar. It was named after a well known cactus dealer Karl Knippel. Coming from Mexico it is frost tender. The small, round, flattened colourful body is divided into five or six low, broad ribs. The dark green is brushed with purplish red at the top, while little tufts of white wool

indicate the areoles. It rarely has a spine, but if one should appear, it is bristle-like and inconspicuous. The numerous flowers are not large, just 1½ to 2 inches across, but with many narrow petals. The colour is deep rose pink to carmine with a darker mid rib. The centres are well filled with orange stamens which surround the small pale greenish yellow stigma lobes.

The plant nearest it is *E. pulchellus*, "small and beautiful". No name could be more appropriate, as the blue green, round, ball-like plant has rows of short yellowish fawn spines with brown tips; these little spine clusters look like stars running down the centre of each rib. The pink to magenta flowers are many petalled, with petals a little wider and blossoms a little larger than those of *E. knippelianus*. A loose bunch of yellow stamens fills the centre and in the middle of them a little twist of green proclaims the three stigma lobes. *E. amoenus* a "pleasing" little plant from Mexico is thought to be a variety. The little half spherical body is residua or bluish in colour. New spines are straw coloured but soon develop the same bluish colour as the body. The whole plant looks as though it has been sprayed with bordeaux. The closely set areoles contain but three spines of any length, any others are so small as to be almost microscopic. The plant is very young and the spines may develop later. Although small the plant has flowered with bright pink blossoms, the petals as symmetrical as a daisy, the back ones having a broad green mid rib.

One much more spectacular is *E. coccineus* the Heart Twister of Colorado. Also of my glasshouse I think! The name actually means "scarlet in colour with a tendency towards carmine". Alas, mine does not agree. But what matter? Could any colour be more glorious than those orange goblets? The incurved petals shade to cream in the throat, where they are met by the cream stamens in a perfect pyramid, the apex, a circle of deep pink anthers. The stigma lobes rising through and above them are like a lovely mossy green flower with many petals. The bright green tube holding this exquisite goblet is short and well furnished with white spines and short wool. The plant itself is 6 inches high and beginning to cluster. The large, soft fleshed body with spiralling ribs has large round, white, woolly areoles, each on the top of a slight notch, and there are usually 9 light fawn radials with a



Fig. 27. Left to right. Top row: *Echinocereus knippelianus*, *E. pulchellus*, *E. coccineus*. Second row: *E. conoideus*, *E. pectinatus* var. *rufispinus*, *E. pectinatus* var. *reichenbachii*. Third row: *E. armatus*, *E. chloranthus*, *E. viridiflorus*. Bottom row: *E. cinerascens*, *E. ehrenbergii*.

dark brown central. This plant could be a variety of *E. triglochidatus*.

Another with a soft body wrinkling into tubercles is "cone-shaped" *E. conoideus*. This plant and the previous one are rather alike, although the spine clusters on the latter are more formidable. There are many cream to fawn 1 inch long spines with the central much longer. The flower is a delicate shade of apricot pink with a deeper pink mid rib to its wide blunt recurved petals. The cream filaments, pink tipped, surround the pinkish cream style which has pale green stigma lobes. The colouring of the whole blossom is exquisitely dainty. This flower should be scarlet, but I am sorry for the incorrect colouring of mine which is so lovely.

The *Echinocerei* in the next group are easily handled as they have pectinate spines. The most spectacular *E. pectinatus* var. *rufispinus*¹ means literally red spines in a comb-like formation. Not all are red, as the colour fades to pink then to straw as the spines mature. The closely spaced ribs have oval areoles almost continuously down them. These areoles resemble large mealy bugs lying on their backs, the spines being the legs. The top of the plant is so delightful it needs no flower to enhance its beauty, being thickly covered with wool, through which fine, pinkish red spines appear, with the central ones a bright rose pink. The colour fades slightly as the spines slip over the top to cascade down the many fine ribs. It is not often a beautiful plant has an equally lovely flower, but this proves the exception. The long pointed, toothed petals are tipped with the bright colour of the spines in the crown of the plant. This shades through white to green as it nears the throat, while the deeper pink mid rib deepens the colour at the tips. The flower is really tri-colour. From the green throat, fluffy lime green loosely arranged filaments with cream anthers sway around the short, thick, cream style which breaks into twelve dark green stigma lobes, almost a flower in itself. A beautiful plant, with a lovely blossom and an exquisite scent as well! No wonder it is so popular.

Another lovely *E. pectinatus* is var. *reichenbachii*, the lace cactus of Oklahoma, Texas and Northern Mexico with ribs bordered on each side with a row of cream lace, while the crown is filled with lace frills. This effect is achieved by the areoles being continuous along the edges of the ribs and the pectinate or comb-like spines falling to either side. The large violet pink blossom shading to reddish plum in the centre has ragged petals, the outer ones being almost transparent but faintly tinged with violet pink, with a green mid rib. A loose bunch of pinkish green filaments with yellow anthers surround the moss green stigma lobes. This lovely blossom is held

in a green cup thickly covered with white wool and looks magnificent sitting on top of the lace trimmed plant.

Eight inch high *E. armatus* may even be another variety. The body is more blue than green, with oval areoles almost meeting. The fine white pectinate radials are coarser than the last mentioned with a longer dark brown central, hence its name "armed". The large flower has two distinct rows of wide toothed petals as well as the ray petals, all in a beautiful shade of rose pink with a deeper purplish pink mid rib on the upper portion of the petals. The throat and filaments are moss green, so the deep cream anthers appear to be floating on a green pond, with the dark green stigma lobes forming an oval island in the centre. This flower has a flattened style and therefore the stigma lobes form an oval shape instead of the usual round.

Here is one with a queer flower perched on the side of the plant looking more like a little frill than a blossom, with its inch long green petals and bronzy red mid ribs, and with pale green stamens in a tight cluster round the deep green stigma lobes. The plant itself is so colourful it needs no spectacular flower, but even so the blossom is most interesting and provides a good contrast. With the sun shining on it, it is really beautiful. The name *E. chloranthus* indicates green flowers. The plant is a 6 inch high blue green column, with oval areoles almost touching and with short pectinate spines, the upper ones in each group cream, tipped with red, the lower all red.

Another with colourful spines is *E. viridiflorus*. This is a most attractive plant, for the areoles, large and round, are filled with white wool and with many intermingling cream, straw and red radials, much longer than those we saw with the pectinate spines, and with centrals longer still and ruby red. The crown of the plant is most decorative, being filled with white wool and ruby red spines. The name would lead us to expect green flowers and how delightful they are, small and bronzy green with a wide bronze mid rib on the inch long petals. But how they glow! The stamens are cream and the bright green stigma lobes are held well above them. The ovary too is bright green with clusters of snow white hair-like spines, which contrast strikingly with the dark green plant. These khaki blossoms could be the smallest *Echinocereus* flowers and are the little gems of the group. This plant was in the desert a year or so ago and has settled down quite happily in its new environment. Was it collected in Mexico, Wyoming or South Dakota? I do not know. They are found in all three places, where they must make a very bright patch of colour. Even though coming from hot climes it is nevertheless quite hardy.

This one with wonderful array of spines is

¹Borg places *rufispinus* and *reichenbachii* as varieties of *E. caespitosus*—S.E.H.

E. stramineus from Mexico, New Mexico and Texas. The "straw coloured" spines which give this plant its name come from round areoles with 2 inch long centrals, which pass later to white. New spines in the crown are delightfully pink. So far there have been no flowers. Here is one from central Mexico making a good cluster. The stems are stout, ribs low and the round areoles filled with cream wool and white spines long and flexible. Its name *E. cinerascens* which means "turning ashy grey" seems to indicate the spines will, with age unfortunately lose their whiteness. However it will retain its beautiful, bright, purplish-pink flowers with wide, toothed and pointed petals which shade to white at the base. Lime green filaments with biscuit coloured anthers, a moss green daisy for its stigma lobes from another outstandingly beautiful blossom. But then aren't they all?

E. ehrenbergii, also from Mexico is a rather similar clustering plant with finer and shorter white spines. But the flower is purplish red in colour with wide petals toothed or ragged edged, and shading to white at the base. The filaments are green with yellow anthers, the stigma lobes dark green.

To be continued

QUESTIONS and ANSWERS

Conducted by
HARRY JOHNSON
Paramount, Calif.



Question: Please give culture for *Bowiea volubilis*. When I put the bulb in sunlight it turned brown. I then placed it in the shade. Should the bulb remain green all winter? Can it be left outside in a pot during winter in our locality?

Mrs. Kenneth Lucas
Carmel, California

Answer: *Bowiea* is a S. African liliaceous plant which should be winter hardy in the mild climate of Carmel. Culture is extremely simple. Does best in a crumbly, loam soil. Generally growth starts about the first of the year the plant sending up its long twining stems to six feet or so which unfold into a plummy, intricately branched mass of branchlets topped by tiny greenish flowers. The true leaves appear only on the small seedlings. In two or three months the stems turn yellow and dry up until only the bulb remains. After growth is fully developed, which may be some two months, give less water and after the growth is yellow or drying withhold water al-

most completely. In three or four months water may be again applied and new growth may then start and be treated in the same manner or you may rest the plant till the following year. Just as growth starts shake the plant out and repot. This may be done yearly but if the compost is in good condition every second year is sufficient. The tunicate bulb should of course have only the base buried in the soil. A mature bulb may be 4-6 inches in diameter at which stage it generally divides into two or more bulbs. While growing the bulb is pale green but during the resting period the outer coat dries to a russet brown the dried film being nature's protection during the long dry season.

Question: Some of my cacti—mostly *Echinocactus* and *Cereus* from 4 to 6 years old—have a discoloration extending from the base upwards. The green turns grayish, finally yellowish brown, hard and cracking as the plant expands. A *Mammillaria* also seems to be shrinking and drying out on different areas as it turns greenish yellow then grayish green. Traveling in southern Alberta I discovered two kinds of cacti, one an *Opuntia* with nice yellow flowers, the other a nipple cactus with beautiful rose red flowers. Could you give me the names?

H. J. Boersma
British Columbia

Answer: The discoloration is due to the dying of the epidermis. The cause is probably due to cultural or climatic conditions. Plants from high altitudes seem to be prone to such discoloration. Also, as you mention some of the genera near *Cereus* such as some *Trichocereus* are prone to it also. No spray that I know of has any effect. Good ventilation will help to prevent its appearance. Thrips cause a very similar effect, the plants becoming grayish losing their bright green color. Red Spider also having a somewhat similar effect. Thrips, a very active tiny insect like a grain of pepper, are easily controlled by rotenone or pyrethrum sprays or the various Malathion or Chlordane preparations. Red Spider may be controlled similarly or by dusting with sulphur. The cacti you found are *Opuntia polyacantha* and *Coryphantha vivipara*. Both these plants are extremely variable and have a wide range from Alberta all the way to Texas.

CHANGE OF ADDRESSES

Address changes are a serious problem to your Editor. Please cooperate and send the change of address by the first of the month, otherwise we will have to make a change of 50c for return postage and remailing another copy.

Succulent Display in Israel and Sweden

By HERMAN F. BECKER

During the past summer, professional obligations in palaeobotany took me to the Near East and to Europe. In Israel and in Sweden, countries over 2500 miles apart as the crow flies (or the plane), I was fortunate to encounter several astonishing open air displays of succulents and other xeric plants. For Israel, such exhibits are perhaps quite natural because the climate is distinctly mediterranean, and the flora akin to that of Italy, the Riviera, or even southern California. In the pioneering spirit of Israel, primary consideration is given to irrigation for the planting of crops, orchards, and forests, but gardens and out-of-door flower displays are not only not forgotten, but play a major role in the esthetic picture of development.

Thus it was not surprising to find in the city of Haifa, on the road to Nazareth and Galilee, a rocky hillside spot on the edge of a ravine called Gibborim, a spot transformed into a veritable succulent oasis of Eden. This little park of about two acres at the northern foot of Mount Carmel is known as Gan Vanof, and affords a splendid view of the Bay of Haifa with the old Arab city of Akko in the hazy distance. An angular background is provided by ultra modern apartment houses that seem to flow from the heights of Mount Carmel down to the sea. Even the landscaping of these buildings, in its own harmony of succulent displays, blends into the little park of Gan Vanof. As the rains are seasonal and sparse, a sprinkler system with a copious supply of water causes the vegetation to thrive vigorously throughout the year. Excepting some Hebrew common names, none of the plants appear to be labeled, and time did not permit to pursue specific identification. An esthetic appreciation can hardly escape the casual visitor and botanist alike who is confronted with this profusion of familiar succulents that we so often grow under trying conditions. In fact, even a "modern" artist could find inspiration in the angular, often bizarre forms of euphorbiaceous plants, in the formidable heads of stiff agaves, dasylirions, and yuccas, and in the grotesquely club-shaped, crested forms of towering cacti. Among all of these there are many clustering forms arising from a dense cover of *Mesembryanthemum*, *Crassula*, *Sedum*, *Sempervivum*, and *Echeveria* that is thrown like a living carpet over the gentle contours of the rock below. Thickets of opuntias, laden with fruit, fence the steeper sections of the park, but aloes, clumps of tall cerei, and tree-like euphorbias dominate the

scene. Under shade-giving trees, from restful benches along the gravel paths, the viewer beholds a peaceful contrast to the bustling city. Magnificent specimens of *Echinocactus grusoni* are placed strategically for best effect. The fortunate location of Gan Vanof conveys an impression of a natural blending of this xeric flora with the rocky hillside in an arid land.

This rough and spiny vegetation is perhaps symbolic of the proud "touch-me-not" spirit that prevails in Israel where a native born takes pride to be known as "Sabra", or "cactus".

Ever since I read, as a child, Niels Holgersen's travels with the wild geese, by Selma Lagerlöf, the names Jönköping and Norrköping cast a magic spell on my imagination. In quite an unsuspected way, Norrköping did not disappoint me. Needless to say Sweden's northern, temperate climate stands in sharp contrast to that of Israel. In most European areas, especially in the Scandinavian countries, succulents and subtropical plants remain out-of-doors only during the short summer months, either potted or in bedding arrangements. Compared to Haifa's Gan Vanof, quite a contrast is achieved in Norrköping with the extremely formal display of succulents in a well-kept public park near Hotellgatan. The entire exhibit consists of a kidney-shaped bed about 40 feet long, placed into a weedless lawn. The plants are arranged in sinuous designs and circles proclaiming as their theme the 100th Anniversary of Norrköping's Workmen's Union. The legend, "Arbeteröförelse—1860-1960" with a central symbol showing clasping hands, is intricately patterned with gray, green, yellowish, and brown-puplish echeverias and sempervivums. This central motif is topped by a stylized crown while the remainder of the display consists of round and scalloped designs interconnected with densely planted succulents. The variously scalloped perimeter contains larger echeverias, aloes, and colorful cacti. A background screen, centered with a Phoenix palm, is made up of a row of tall cerei and euphorbias. All plants are carefully selected for their height, size, shape, and color to fit into this meticulously executed pattern. The rarely encountered neatness and exactitude reflects much patience with an emphasis on detail, and perhaps also the temper of the Swedish people. A large sign with sketches of some plants enumerates the species and states that about 15,000 plants were used for this display. It is signed "Norrköping's City Administration". The list of species is as follows:



Fig. 28

Four top pictures: Succulent display in Noorköping, Sweden. Four bottom pictures: Gan Vanot Succulent Garden, Haifa, Israel. Photos by H. F. Becker.

Phoenix canariensis
 Dasyliirion glaucophyllum
 Aloe
 Cereus. Pelarkaktus, Flera Arter
 Cereus peruvianus var. monstrosus
 Echeveria elegans
 Echeveria desmetiana
 Echeveria metallica
 Echeveria
 Echinocactus electracanthus
 Echinocactus ottonis
 Euphorbia canariensis

Haworthia margaritifera
 Leucophyta brownii
 Mammillaria centricirra
 Mammillaria pusilla
 Mammillaria spinosissima
 Opuntia boliviana
 Sempervivum arachnoideum
 Sempervivum

With the reverence that is accorded public flower displays all over Europe, it would not be surprising if other such succulent gardens could be found in many continental cities.



Fig. 29
Crassula socialis Schoenl. nat. size

Interesting Succulents

J. R. BROWN

Crassula socialis Schoenl.¹

One of the interesting South African *Crassulas* noticed in the I.S.I. collection at Millbrae. It is a dwarf mat-forming species native in the Middle-drift area, Kingwilliamstown Div., Cape Province.

The green rosettes are to 15 mm. in diameter, the leaf margins fringed with minute, retrorse, pellucid cilia. The flower stems are about 2 cm. tall with usually 3 pairs of stem bracts and terminated by the somewhat capitate cluster of tiny

flowers. The petals are white and more or less erect.

Schoenland states, "The horizontal very short style is unique in the genus."

This is a very proliferous little plant and forms pleasing mats of green, and flowers during February through March.

¹Schoenland, S. Materials for a Critical Revision of Crassulaceae. Trans. R. Soc. S. Afr. 17(3): 241. 1929.

New Bolivian Cacti

By M. CARDENAS

PART VII

Monvillea apoloensis Cárđ. sp. nov.

Columnaris, erectus vel prostratus 2-3 m. altus. Ramis atro viridis 3-4 cm. crassis. Costis plus minusve 8, 7 mm. altis, 8 mm. latis. Areolis 12 mm. remotis, circularis, 3 mm. diam. prominentibus cinereo tomentosis. Aculeis radialibus 10-13 radiantibus 5-10 mm. long. cinereis apice nigris. Aculeo centrali uno, 2-3 cm. long. deorsum directo cinereo vel nigrescenti. Floribus in parte superiore ramorum, infundibuliformibus, nocturnis 7-7.5 cm. long. Ovario globoso 1.5 cm. long. tuberculato atro viride, squamis minutissimis viride brunescens mucronatis instructo. Tubo 3.5 cm. long. viride, squamis paucis latis viridibus praedito. Phyllis perigoni exterioribus carnosissimis lato lanceolatis 15 mm. long. inferne viridibus superne purpureis; phyllis interioribus flavo viridiscentibus membranaceis obtuso lanceolatis 15 mm. long. Staminibus numerosis ex parte superiore cavitatis tubi usque basim petalorum 1.5-2 cm. long.; filamentibus gracilissimis albis; antheribus dilute bruneis. Style 4.5-5 cm. long. albo, 12 lacinis stigmaticis gracilibus albis coronato.

Patria: Bolivia. Provincia Caupolicán. Departamento La Paz, in itinere Apolo-Santa Cruz del Valle Ameno.

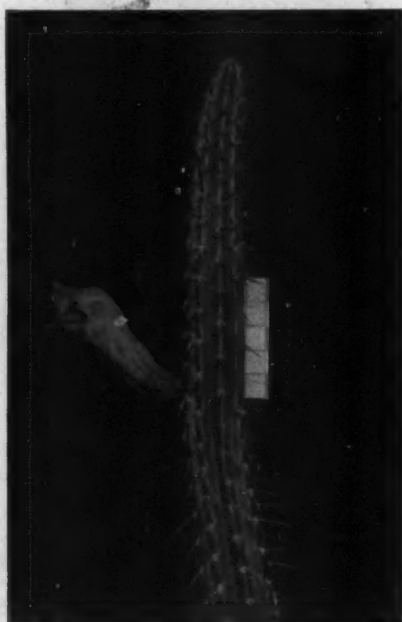


Fig. 30
Monvillea apoloensis sp. nov.

Columnar, erect or prostrate 2-3 m. tall. Branches dull green 3-4 cm. thick. Ribs about 8, 7 mm. high, 8 mm. broad. Areoles 12 mm. apart, circular 3 mm. diam. prominent, gray

felted. Radial spines 10-13, spreading 5-10 mm. long, thin acicular gray blackish tipped; central spine 1, downwards directed 2-3 cm. long gray or blackish. Flowers from near the top of stem funnelform, 7-7.5 cm. long 3 cm. limb night opening. Ovary globose 1.5 cm. long tuberculate dark green shining, with very short green brownish mucronate scales. Tube 3.5 cm. long green shining bearing few scattered broad short green

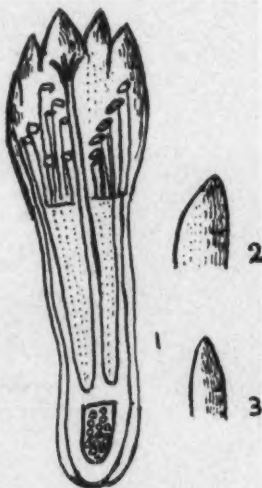


Fig. 31
Monvillea apoloensis; 1 flower, 2-3 outer and inner perianth segments x 1.0

scales. Outer perianth segments fleshy broadly lanceolate 15 x 8 mm. green below purplish above; inner segments yellow greenish membranaceous obtuse lanceolate 15 x 6 mm. Understamens cavity 3 cm. long, white. Stamens numerous from above tube cavity to the base of inner perianth segments 1.5-2 cm. long; filaments very thin, white; anthers light brownish. Style 4.5-5 cm. long white. Stigma rays 12 thin whitish 7 mm. long.

Bolivia. Province of Caupolicán. Department of La Paz. On the way Apolo to Santa Cruz del Valle Ameno, 1,400 m. August 1959, Cárđenas No. 5,521 (Type) in Herbarium Cardenarianum.

Obs.

Cleistocactus azerensis Cárđ. sp. nov.

Columnaris a base ramosus 4-60 cm. altus. Ramis griseo viridibus 3.5-4 cm. crassis. Costis plus minusve 23, 3-4 mm. altis, 3-4 mm. latis. Areolis 5 mm. separ-

atis ellipticis 2-3 mm. long. prominentibus diluto bruneis tomentosis. Aculeis non distinguendis in radialibus aut centralibus 16-24, radiantibus, acicularibus 1-5 mm. long. albis vel diluto flavis. Floribus numerosissimis in superiore parte ramorum interdum densa corona dispositis, zygomorphis, tubulosis 4-5 cm. long. 7 mm. diam. Ovario globoso 5 mm. long. atro magentibus, squamis minutis 1 mm. long. albidis, pilis paucis brevibus albis praedito. Tubo curvato 3 cm. long. temperate magente, squamis 2 mm. long. albidis, pilis paucis albis brevibus instructo. Phyllis perigoni exterioribus 7 mm. long. inferne diluto magentibus superne viridiscentibus lanceolatis, exterioribus curvatis; phyllis interioribus lanceolatis 6 mm. long. magentibus. Staminibus inferioribus ex fundo tubi usque 5 mm. sursum, filamentis tenuissimis inferne albis, superne magentibus. Staminibus superioribus 12 mm. long.; omnibus antheris atro magentibus. Style 3.5 cm. long. inferne magenti, superne albo, 7 lobis stigmaticis dilutissime viridibus coronato. Fructu globoso 8 mm. diam. atro rubeo, squamis albis paucis, pilis albis praedito. Seminibus 1 mm. long. nigris nitentibus punctulatis.

Patria: Bolivia. Provincia Azero. Departamento Chuquisaca, prope Puente Pacheco, 1,100 m.

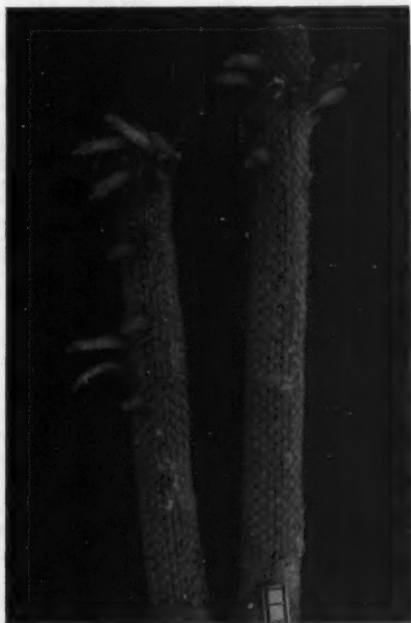


Fig. 32
Cleistocactus azerenensis sp. nov.

Columnar branching from the base. Branches 40-60 cm. tall 3.5-4 cm. thick, gray green. Ribs about 23, 3-4 mm. high, 3-4 mm. broad. Areoles 5 mm. apart, elliptic 2-3 mm. long, prominent light brown felted. Spines not differentiate in radials and centrals, 16-24, spreading, acicular 1-5 mm. long white or light yellow. Apical areoles with reddish spines. Flowers numerous from the upper section of branches forming some



Fig. 33
Cleistocactus azerenensis: 1-2 flower x 1.0

times a dense top crown. Flowers zygomorphic somewhat S-shaped tubulous 4-5 cm. long 7 mm. diam. at the middle of the tube. Ovary globose 5 mm. long dark magenta with minute whitish 1 mm. long scales which bear few white short hairs. Tube curved 3 cm. long light magenta with whitish 2 mm. long scales bearing very few short white hairs. Outer perianth segments 7 mm. long light magenta below, greenish at the tips, lanceolate 2 mm. wide curved outwards; inner segments 6 x 3 mm. lanceolate, magenta. Lower stamens from above nectary cavity to 5 mm. above, 3 cm. long, filaments very thin, white below, magenta above. Upper stamens 12 mm. long, all anthers dark magenta. Style 3.5 cm. long magenta at base white above. Stigma lobes 7, very light green 3 mm. long with glandular hairs. Fruit globose 8 mm. diam. dark red with white scales bearing few white hairs. Seeds 1 mm. long black shining.

Bolivia. Province of Azero. Department of Chuquisaca. Puente Pacheco, 1,100 m. April 1959. M. Cárdenas No. 5522 (Type) in Herbarium Cardenasianum. Cotype in the National Herbarium, Smithsonian Institution.

Obs. This species seems related to *Cl. parapietensis* Cárdenas from the same area but differs by its longer and curved flowers.

Cleistocactus vallegrandensis Cárdenas, sp. nov

Columnaris ramosus 30-60 cm. altus, 2-2.5 cm. crassus atro viridis. Costis 12-13 transverso sulcatis 3 mm. altis 4 mm. latis. Areolis 4-5 mm. inter se distantibus, circularibus, prominentibus 2-3 mm. diam. atro bruneis vel nigro tomentosis. Aculeis radialibus 15-18, radiantibus 5-20 mm. long. Aculeo centrali uno 2-3 cm. long.; omnibus aculeis gracilibus, acicularibus flavis. Floribus numerosis tubulosis 3-3.5 cm. long. 7 mm. crassis, curvatis, diluto magentibus. Ovario globoso 5 mm. long., squamis minutis acutis, pilis albis instructis. Phyllis perigoni exterioribus lanceolatis 4 mm. long. atro magentibus; phyllis interioribus spatulatis diluto magentibus 5 mm. long. Staminibus inferioribus ex fundo tubi usque 5 mm. supra, 2.5 cm. long.; staminibus superioribus 5 mm. long.; filamentis gracilissimis inferne albis, superne magentibus; an-

theris atro magentibus. Stylo 2.5 cm. long. diluto magenti, 6 radis stigmaticis diluto viridibus coronato.

Patria: Bolivia. Provincia Valle Grande. Departamento Santa Cruz, prope Valle Grande, 2,700 m.



Fig. 34
Cleistocactus vallegrandensis sp. nov.

Columnar, branched from the base. Branches dark green, 30-60 cm. tall, 2-2.5 cm. thick. Ribs 12-13; 3 mm. high, 4 mm. broad. Areoles 4-5 mm. apart, circular prominent 2-3 mm. diameter dark brown to blackish felted. Radial spines 15-18 spreading 5-20 mm. long. Central spine one, horizontally, upward or downward directed 2-3 cm. long. All spines thin acicular straw yellow. Flowers numerous from the upper section of stem, tubulous 3-3.5 cm. long 7 mm. thick, curved light magenta. Ovary globose 5 mm. long with minute magenta acute scales bearing rather few white hairs. Tube 2.5-3 cm. long, cylindric curved above ovary with 1 mm. long dark magenta scales which bear few white hairs. Outer perianth segments lanceolate 4 x 2 mm. dark magenta; inner segments spatulate, light magenta, 5 x 2 mm. Stamens in two rows. Lower stamens from the bottom of tube above nectar cavity to 5 mm. above, 2.5 cm. long; upper stamens 5 mm. long; filaments very thin white below, magenta above; anthers dark magenta. Style 2.5 cm. long light magenta. Stigma lobes 6 very light green, 3 mm. long with several gland hairs.

Bolivia. Province of Valle Grande, Department of Santa Cruz. On the way Vallegrande to



Fig. 35
Cleistocactus vallegrandensis; flower x 1.0

Candelaria, 2,600 m. October 1959. M. Cárdenas No. 5523 (type) in Herbarium Cardenasianum.

Obs. This species is distinguished by its dense and long spines and the bright magenta flowers.

Cleistocactus villamontesii Cárdenas, sp. nov.

Columnaris caespitosus 25-40 cm. altus. Ramis curvatis diluto viridibus 2-3 cm. crassis superne angustioribus. Costis plus minusve 15, sulcatis 3 mm. altis, 4 mm. latis. Areolis 4 mm. remotis 2 mm. diam. prominentibus temperato bruneis tomentosis. Aculeis plus minusve 20, 2-6 mm. long. non distinguendis in marginales aut centrales tamen nonnunquam pulvillis cum 1-3 aculeis centralibus usque 1 cm. long.; omnes aculei graciles aciculares flavis. Floribus numerosis in parte superiore ramorum, tubulosis zygomorphis 5 cm. long. 8 mm. crassis in fauce constrictibus, coloris rubei fragariae. Ovario conico vel globoso 6 mm. long., squamis minutis pilis albis densis praedito. Tubo 3.5 cm. long. squamis atro purpureis pilis paucis albis praedito. Phyllis perigoni exterioribus lanceolatis 7



Fig. 36
Cleistocactus villamontesii sp. nov.

mm. long. inferne albis superne diluto viridibus; phyllis interioribus spatulatis 10 mm. long. inferne albis superne dilutissime viridibus. Stamina inferioribus ex fundo tubi usque 5 mm. supra 3-3.5 cm. long.; staminibus superioribus 15 mm. long.; filamentibus gracilissimis inferne albis superne diluto magentibus. Omnia staminibus perigonium superantibus. Stylo 4.2 cm. long. gracile, albo, stamina superante, 5 lobis stigmaticis smaragdo viridibus coronato. Fructo globoso 1.2 cm. long. rubei fragariae.

Patria: Bolivia. Provincia Entre Rios. Departamento Tarija, prope Angosto de Villa Montes, 460 m.

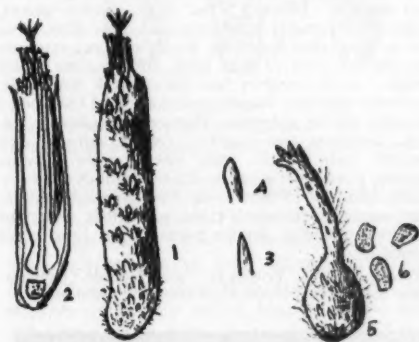


Fig. 37

Cleistocactus villamontesii: 1-2 flower, 3-4 outer and inner perianth segments, 5 fruit, x 1.0. 6. seeds x 4.0.

Columnar much branched from the base 25-40 cm. tall. Branches curved slightly tapering, fresh green 2-3 cm. thick at the base. Ribs about 15, 3 mm. high, 4 mm. broad, grooved. Areoles 4 mm. apart, 2 mm. diam. prominent, light brown felted, circular. Spines about 20, not clearly differentiate, 2-6 mm. long, acicular, thin, straw yellow. Some areoles with 1-3 central spines up to 1 cm. long. Top areoles with very short spines. Flowers from the upper section of the branches tubulous zygomorphic 5 cm. long 8 mm. thick constricted at the faucis, strawberry red. Ovary conic 6 mm. long with minute fleshy scales bearing dense silky white hairs. Tube 3.5 cm. long much constricted above with fleshy dark purple scales which bear few long white hairs. Outer perianth segments lanceolate 7 x 2 mm. very light green above, white below; inner segments spatulate 10 x 2.5 mm. very light green at the tops, white in most of its length. Stamens in two rows. Lower stamens from above nectar cavity to 5 mm. above, 3-3.5 cm. long. Upper stamens 15 mm. long; filaments very thin, white below, light magenta above; anthers dark magenta. All stamens exerted in a tight fascicle. Style 4.2 cm. long, thin, white, much longer than stamens. Stigma rays emerald green 5, 2.5 mm. long. Interior of the flower tube light pink. Fruit globose 1.2 cm. long, strawberry red, bearing acute white scales and a dense white

pubescence. Seeds 1.2 mm. long, dark brown, shining, punctulate.

Bolivia. Province of Entre Rios. Department of Tarija. Angosto de Villa Montes 460 m. May 1958. Cárdenas No. 5524 (Type) in Herbarium Cardenasianum. Cotype in the National Herbarium of the Smithsonian Institution.

Obs. The new *Cleistocactus* recalls *Cl. smaragdiflorus* by its green perianth segments, but differs by its constricted faucis, its much exerted and disposed in a tight fascicle stamens, the shorter flowers and a decumbent habit.

Cleistocactus crassicaulis Cárdenas, sp. nov.

Columnaris, 60 cm. altus, 6-7 cm. crassus diluto viridis. Costis plus minusve 14 obtusis, 6 mm. altis, 10 mm. latis transverso sulcatis. Areolis 8 mm. remotis circularibus 1.5-2 m. diam. atro cinereis tomentosis. Aculeis marginalibus 8-10 radiantibus 3-5 mm. long. gracilibus acicularibus. Aculeis centralibus 1-3 deorsum directis 7-20 mm. long. acicularibus. Omnes aculei cinerei a basi incrassati. Floribus paucis ex parte superiore ramorum nascentibus, tubulosis regularibus in fauce constrictis 3.5 cm. long. 9 mm. crassis. Ovario globoso, squamis minutis diluto viridibus acutis, pilis densis albis sericeis praedito. Tubo 2.5 cm. long. roseo purpureo superne flavo, squamis acutis diluto viridibus, pilis albis densis sericeis instructo. Phyllis perigoni exterioribus linearibus lanceolatis 4 mm. long. smaragdo viridibus; phyllis interioribus lanceolatis 7 mm. long. superne temperato viridibus inferne albescentibus. Stamina inferioribus ex fundo tubi usque 4 mm. supra, 2 cm. long.; staminibus superioribus 4 mm. long. Filamentis gracilissimis albis; anthereis diluto flavis. Stylo 2.5 cm. long. inferne albo, superne viridescente parce

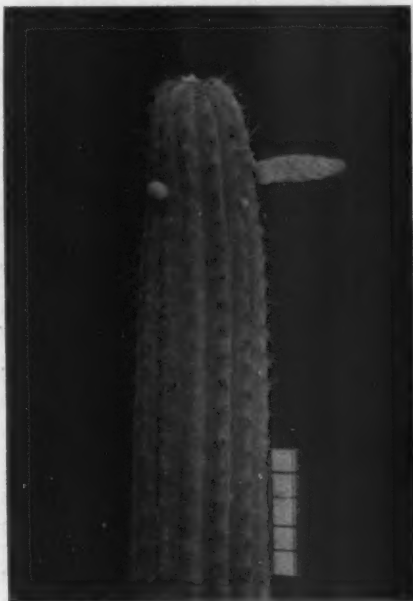


Fig. 38

Cleistocactus crassicaulis sp. nov.

exerto, 8 radiis stigmaticis smaragdo viridis coronato. Alabastro pilis densis albis sericeis clauso. Fructu globoso 1.3 cm. long. fragariae rubes, squamis numerosis 1-2 mm. long. hyalinis, pilis densis albis praedito. Semina 1.1 mm. long. atro brunescitibus, nitentibus, punctulatis.

Patria: Bolivia. Provincia Entre Rios. Departamento Tarija, prope Angosto de Villa Montes, 460 m.

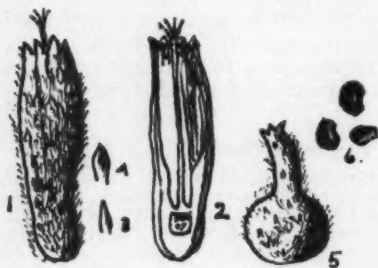


Fig. 39

Cleistocactus crassicaulis; 1-2 flower, 3-4 outer and inner perianth segments, 5 fruit, x 1.0. 6. seeds x 5.0

Columnar, about 60 cm. tall 6-7 cm. thick slightly tapering, light green. Ribs about 14 roundish 6 mm. high, 1 cm. broad transversly grooved. Areoles 8 mm. apart, circular 1.5-2 mm. diam., dark gray felted. Radial spines 8-10 spreading 3-5 mm. long, thin acicular. Central spines 1-2 directed downward 7-20 mm. long, acicular. All spines gray, swollen at base. Flowers from near the top of stems. Buds densely covered with white silky hairs. Flowers tubulose, regular, constricted at the tip, 3.5 cm. long, 9 mm. thick. Ovary globose with light green acute minute scales bearing dense white silky hairs. Tube 2.5 cm. long purple-pink, turning yellowish above with light green, acute 1.5 mm. long scales which bear dense white hairs. Outer perianth segments 4 x 1.2 mm. linear lanceolate, emerald green; inner segments lanceolate 7 x 2 mm. light green above, whitish below. Lower stamens from above nectar cavity to 4 mm. above, 2 cm. long. Upper stamens 4 mm. long; filaments very thin, white; anthers light yellow. Style 2.5 cm. long white, greenish above, slightly exerted. Stigma rays 8, emerald green 2 mm. long. Fruit globose, 1.3 cm. long, strawberry red with numerous 1.2 mm. long hyaline scales bearing dense white hairs. Seeds 1.1 mm. long, dark brown, shining, punctulate.

Bolivia. Province of Entre Rios. Department of Tarija. Near Angosto de Villa Montes, 460 m. May 1958. M. Cárdenas No. 5525 (Type) in Herbarium Cardenasianum.

Obs. This new species differs from all the others by its thick stems which recalls *Trichocereus* and its greenish fusiform densely haired flowers.

Cleistocactus piraymirens Cár. sp. nov.

Columnaris ex base ramosus 0.60-1 m. altus. Ramis apice gracilioribus 3 cm. crassis cinereo viridibus. Costis plus minusve 15, 4 mm. altis, 6 mm. latis. Areolis 1 cm. separatis prominentibus, circularibus 3 mm. diam. nigrescentibus tomentosis. Aculeis radialibus 12-18 radiantibus gracilissimis 4-10 mm. long. Aculeo centrali uno inferne directo 1.5-2.5 cm. long. Omnes aculei aciculares albis. Alabastro pilis albis densis clauso. Flores ex longitudo ramorum nascentes tubulosi 5 curvati 5-6 cm. long. 12 mm. a fauce lati. Ovario globoso 6 mm. long. squamis acutis albis mucronatis, pilis albis densis, sericeis, setis 5-8 mm. long. gracilibus albis praedito. Tubus 3.5 cm. long. superne patens, magentibus, squamis atro purpureis, pilis albis, setis 1-2 cm. long. albis instructis. Phylla perigoni exteriora linearia lanceolata 10 mm. long. atro magenta, apice bruneo; phylla interiora late lanceolata 8 mm. long. temperato magenta. Stamina inferiora 3-3.5 cm. long.; filamenta diluto magenta. Stamina superiora 1 cm. long.; filamenta atro magenta. Omnes antherae atro magenta. Stylo 3.5 cm. long. inferne roseo, superne magente, 8 lacinis stigmaticis diluto viridibus coronato. Fructu elliptico 15 mm. long. atro purpureo viridisciente, squamis acutissimis rubis, pilis albis, setis 5-10 mm. long. praedito. Semina parva 1 mm. long, nigra nitentia.

Patria: Bolivia. Provincia Valle Grande. Departamento Santa Cruz, prope Rio Piraymiri, 1,800 m.



Fig. 40

Cleistocactus piraymirens sp. nov.

Columnar, branching from the base 0.60-1 m. tall. Branches 3 cm. thick, tapering, gray-green. Ribs about 15, 4 mm. high 6 mm. broad. Areoles 1 cm. apart, circular, prominent, 3 mm. diam., blackish felted. Radial spines 12-18 spreading, very thin 4-10 mm. long; central spine, one,

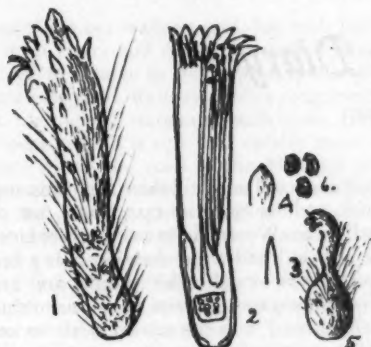


FIG. 41

Cleistocactus piraymirensis: 1-2 flower, 3-4 outer and inner perianth segments, 5 fruit, x 1.0. 6. seeds x 4.0.

directed downwards 15-25 mm. long. All spines acicular, thin, whitish. Flower buds densely covered with white hairs. Flowers tubulose somewhat S-curved 5-6 cm. long, 12 mm. limb. Ovary globose, 6 mm. long with acute 1 mm. long whitish mucronate scales bearing dense white silky hairs and 5-8 mm. long, thin white bristles (unusual in *Cleistocactus*). Tube 3.5 cm. long widening above ovary, magenta with white hairs and 1-2 cm. long thin white bristles. Outer perianth segments linear lanceolate 10 x 1.5 mm. dark magenta, brownish tipped; inner broadly lanceolate 8 x 5 mm. light magenta. Lower stamens 3-3.5 cm. long; filaments light magenta. Upper stamens 1 cm. long; filaments dark magenta. Anthers dull magenta. Style 3.5 cm. long, pink below, magenta above. Stigma rays about 8, light green 2 mm. long. Fruit dark green purplish 15 mm. long bearing 1 mm. very acute red scales, white hairs and 5-10 mm. long, white bristles. Seeds black 1 mm. long shining, punctulate acute at hilum end.

Bolivia. Province of Valle Grande. Department of Santa Cruz. Rio Piraymiri, 1,800 m. September 1959. M. Cárdenas No. 5526 (Type) in Herbarium Cardenasianum.

Obs. This is a strange species differing from all other *Cleistocactus* by its slanting flower faucis with the outer and middle perianth segments deflexed and particularly by its long, thin and white bristles on the ovary and the tube. Also unusual is the behavior of anthesis lasting for several days. This might represent a taxon placed between *Cleistocactus* and *Bolivicerus*.

(To be continued)

CACTI SLOWLY INFECTING IOWA STATE FAIR

By GEORGENE PETERSEN

The Iowa State Fair opened a division this year to the cacti and succulent enthusiast. Until this year the Fair Board has never realized the interest present in Iowa in these plants.

There was a total of 26 entries. This is very poor when it is realized that one need not be a state resident. May be this can be blamed on poor publicity.

The lighter side of any show of course is the winning of ribbons. And those of us who did enter know the thrill of seeing our own plants admired by passers-by. There were classes for arrangements using cacti and succulents. Attractive dish garden using cacti and succulents. Grated cactus; specimen cactus; specimen succulent; crested cactus or succulent; and of course a class for the collection of cacti, and one for the collection of succulents. All were represented except the grafted cactus class.

The amount of \$66.00 was the total for the prizes. This was divided according to \$3.00 for the first prizes and Sweepstakes. Two dollars for 2nd prizes, and \$1.00 for each of the 3rd and 4th prizes. All prizes included ribbons.

Mr. Joe Woherty, a local florist and member of the Des Moines Cacti and Succulent Society, acted as Judge. In one of the classes there were plenty of plants, but no blue ribbon was awarded because the quality of the plants did not come up to the award. This meant a great deal to those of us who did win a blue ribbon, because we knew our ribbon really meant quality.

The opportunity to listen to comments of passers-by is always very interesting. For example the author has had people come to her home that could not see anything in cactus; but in a large show one can hear many people say how these thorny plants fascinate them. One of the members of the Des Moines Cactus Society, who entered, found that it increased her enthusiasm for her own plants by entering in the show.

Although the number of entries expected did not materialize, we feel it is due to lack of publicity and not lack of interest. Mrs. Ray Sterret, superintendent of this division, said the Cacti and Succulent division would be open again next year with this in mind. You need not be a state resident, and if you are interested write to the Iowa State Fair Board, Des Moines, Iowa and ask for a premium list. We welcome you most heartily.

HOWARD E. GATES SOCIETY

The Howard E. Gates Memorial Cactus & Succulent Society ended its first year as an organized Society, in December, 1960. Officers were: President, Mrs. Pat Moorten, Palm Springs; Vice-President, Mrs. Betty Sinclair, Corona; Secretary, Mrs. Wilma Van Gundy, Riverside; Treasurer, Dr. Pearl Lee, San Bernardino.

The Membership, numbering about 70, live in San Bernardino, Riverside, and San Diego Counties, California, and meetings were held in San Bernardino, Riverside, and adjacent communities. We met in members' homes and gardens, and in bank or other public buildings. During the summer months, pot-luck dinners were part of the meetings, followed by the programs.

Besides the programs, activities consisted of plant sales, a study course of the succulent group of plants, and tours. We enjoyed visiting Moortens' Desertland Gardens, Palm Springs, Huntington Gardens, San Marino, Howard E. Gates Cactus Gardens, Norco, and Mr. R. H. Diehl's Cactus Gardens, Vista.

Our Society Library was started, with Col. Herman G. Halverson, Riverside, as Librarian, and our many books proved very popular.

The High Point of our year came with the winning of the First Award for a cactus garden entry at the San Bernardino County Fair, Victorville, California. Besides a large blue ribbon, we were presented with the Charlie Austin Trophy.

MRS. JOYCE L. TATE, Riverside

Our Mexican Diary

By HAZEL JOHNSON

PART II

Aug. 27. We spend the day, which is Saturday, in a taxi about Guadalajara. First Pat and Slim wish to visit with friends and then we cover several blocks of stores seeing much of silver articles and other crafts. The very large new market, Nuevo Mercado Libertad, is of modern design with parking and unloading facilities. There are so many stalls: on the first floor are fruits and vegetables and various small stand selling ready to eat delicacies, among them ice cream. The fruits we saw were papayas, tomatoes, pepinos, several varieties of bananas, various greens, radishes, peas, apples, etc. It is a noisy place as hawkers shout their wares and several thousand people walk the aisles. On the second level are lunch counters, all are crowded at this hour. There is much friendliness and gaiety and we seem to be a little part of it as we take a place at one of the counters and order chicken soup, though we had a choice of chili and beans, chili rellenos, chicken and rice, stews of various kinds and roast meats. On another part of this floor were clothing of all kinds; huge sombreros, brushes, brooms, tinware, mirrors, tools, all kinds of harness, etc.

Aug. 28. Leaving Guadalajara we travel but a short while when we reach Lake Chapala a very large lake which must have been here for many centuries as it is almost filled with silt. It is very shallow and over its surface float water hyacinths in patches often acres in extent. By the road are wild zinnias and red flowring dahlias. *Lemaireocereus dumortieri* and more tree *Opuntias* appear. In Zamorra we are much interested in the plaza as it is surrounded by huge old banyan trees just as the Plaza at Ica in Peru was. We camped just below Zamorra.

Aug. 29. Harry finds another begonia, there are many mints and *Convolvulaceae*. Especially pretty is a lovely bush variety seen near Camanja. *Myrtillocactus geometrizans* and *schenkii* are here along with large *Opuntias* laden with fruit.

Aug. 30. We spend several hours in San Miguel de Allende a colonial town founded in 1542. It has been named a national monument to preserve its charming atmosphere. There are many tourists here and an Art Institute. The church dominating the city was of plain Franciscan architecture but Cerefino Gutierrez an Indian architect made it over into a many steepled French Gothic design. We are not far from Mexico City now. There are many farms

with just a low hill now and then. *Myrtillocactus*, *Opuntias* and *Pachycereus marginatus* are occasionally seen. We decide to camp before entering the city and find a nice location near a beer and soft drink stand. The people are very friendly and express a desire to see our cabin. They are amazed with the accommodations and seeing the empty refrigerator they must fill it for us. We talk about our families, admire the youngsters and so the evening is spent.

Aug. 31. We had reservations at the Continental Hilton and upon arriving there called Mr. Gold, Treasurer of the Mexican Cactus and Succulent Society and made an appointment for 5 o'clock. Meanwhile, we called for a taxi and went to the University of Mexico where we met Dr. Helia Brava and Mr. Gold. We had a wonderful afternoon among the beautiful plants many of them native in the Botanic Garden. The University and garden are located on an old lava bed. The beautiful grottos and natural formations make ideal spots for plantings. The garden contains a specimen of perhaps the rarest of all succulents also one of the most curious, *Calibanus hookeri*. The plant looks like a bun sitting on the ground some 15 inches across. A few small sprouts with narrow yucca-like leaves is all there is. It is an extremely simplified *Dasyllirion*; an expanded rootstalk with very reduced branches. A monotypic genus segregated from *Dasyllirion* in 1906 by Dr. J. N. Rose. In the wilds the plant is very rare. Returning to the hotel we discussed hotel accommodations and a few other matters pertinent to the Convention.

Sept. 1st. Late afternoon we discussed the convention plans further with Mr. Gold and Mr. Castellá, chairman for the Convention. Señor and Señora Castellá were our hosts for a most enjoyable dinner party at La Cava. Mexican musicians played and sang some of their native songs for us. In the Mariacha Plaza later in the evening the Mariacha bands played and sang to us under the stars.

Sept. 2. Spent the day shopping and resting.

Sept. 3. We left the hotel and proceeded southwest to Puebla. The sky was overcast and it rained intermittently so pictures, much to our regret, were practically impossible. We passed large fields of Agaves and at approximately 10,000 feet we reached the summit. We stopped for lunch at Ri Frio at a native stand, selecting our food from the various kettles always kept hot. Harry and Slim chose a soup, "not very

picante", so our waitress said, but with his first spoonful Harry said it was like molten lava and decided to change to the bean soup Pat and I found very good. Rolls and coffee completed our fare. On the wall were cages with birds: canaries and paraquets. It is very cold outside as we start again. Along the road is the Mexican poppy larger than far below; bright cosmos blossoms and the morning glory bush and lupines are here. More farms of *Agave atrovirens* from which pulque is made cover the hillsides. After going through the charming town of Puebla we camp for the night in a large rock quarry. Quite a few of the rocks have quartz in them. On the hill back of it we found great clusters of *Ferocactus robustus*, the mounds were sometimes 4 feet across with yellow blossoms. There was also *Coryphantha* and white spined *Mamillarias*. Around the rim of the hill ran an irrigation ditch. A boy came by with a flock of goats.

Sept. 4. Harry decided to try for a picture of Ixtaccihuatl and Popocatepetl in the distance. We see little shrines along the way, then a *Yucca* similar to *Yucca australis*, a lovely yellow *Solanum* and a pretty Composite. Unusually large pepper trees are laden with berries. We stop in Tehuacan for ice and water and just in time as our tanks are almost empty. The water comes from deep wells. The market, I always find the most interesting, had many varieties of fruits, flowers and vegetables such as guineo (red bananas), large bananas of our commercial type and tiny ones about 4" long which they called pepitos, red tomatoes and the husk cherry with a thin brown covering that burst open. There were peanuts and walnuts similar to English type but smaller, and paper-shell pecans. Beautiful gladioli were in great abundance. There were papaya, pomegranates and mangoes. We come to a great valley with mountains close beside us that have many caves. One had large stalactites. Little *Mammillarias* grew in the rocks and barrels in abundance, one a *Ferocactus* and the other *Echinocactus grandis*. *Lemaireocereus hollianus* and *Myrtillocactus schenckii* are also present. At the foot of the mountains was an irrigation canal running full of water. There were many goats being herded over the valley floor. We return to Tehuacan taking the road south and camped on a hill where we had a wonderful view of the town. On the hill were many varieties of cacti: *Corypantha*, *Mamillaria mystax*, *M. elegans*, and a pink spined form of *M. karwinskiana*. Also *Yucca* and huge *Echinocactus grandis*. Pat found a *Tradescantia* similar to *R. navicularis* with thick roots and overlapping leaves and clusters of pink flowers. Another species with overlapping woolly white leaves and deep roots with tuber on end. Also *Agave stricta*.

Sept. 5. Mists cover the valley below, break-

ing, then drifting along the mountain-side across the valley. Shortly after leaving camp we see our first big *Beaucarnea* with huge bulbous base more than 6 feet through and as tall with several trunks branching into many arms crowded with vase-like tufts of slender arching leaves; also some palms. Slim finds some beautiful onyx. Across a deep cleft in the hillside Harry spotted a plant with vivid red flowers; it is a very pretty *Hibiscus* about one foot tall with flowers 2"-2½" across with densely woolly leaves. A very striking plant. A white morning glory with maroon throat grows into tree-like bushes sometimes 25 feet tall. For a few miles there are many of them. An orchid and *Hylocereus* grow together on a tree. Then a few miles further a beautiful and wonderful sight is a forest of *Cephalocereus hoppenstedtii* with *pseudocephalia* 10 or more feet long on many of the plants. Plants grew to a height of 30 feet and growing with them are *Pachycereus chrysomallus* which were branched. There were huge vase-like plants of *Myrtillocactus* probably a form of *M. geometrizans* or possible *M. grandiaureolatus*. Many tree-like *Opuntias* and some smaller types and great mounds of *Echinocactus flavovirens* and *Echinocactus robustus*. Scattered plants of *Coryphantha* similar to *C. palmeri* and many plants of *Mam. tetracantha*. A little further on we came to a very large cereus which branched from the base, the columns 8 inches or more in diameter, and up to 30 feet tall, *Pachycereus ruficeps*. The younger spines were decidedly reddish in color. There was no *pseudocephalum*, the flowers being borne at the top of the stems. Further along, after crossing a ridge, we came to a moister area and find *Escontria chiotilla* in fruit and flower. Also a *Lemaireocereus* near *treleasei* and *Myrtillocactus*. We start descending and see a quaint town, Llanoverde, with a church steeple showing in the distance and suddenly beside us is *Distictus cinerea* in full bloom, a really lovely sight. A tall vine literally smothered in large purple pansy-like flowers. Then it began to rain rather heavily as we went through a beautiful mountainous area. It is getting dark early with an over-cast sky so decide to camp for the night in a little clearing at the edge of a cliff with a roaring river far below.

Sept. 6. We travel through beautiful country although the cactus forests are now fields of corn, Agaves, etc. We stop for a late breakfast, at the same time admiring the many wild flowers about us, one a lovely species of *Penstemon* as large and fine as any in our gardens at home. An interesting milkweed with pine-needle leaves, many varieties of the mosquito flower (*Cuphea*) and other species of the large bush Morning Glory. In the valley along the stream grew the Montezuma Cypress, a very lovely large tree

well branched from the base to the top with soft, green, feathery foliage, *Taxodium mucronatum*. As we ascended the hills, the forest changed to pine and oak. One of the pines resembled our Monterey Pine, and the other had long, blue-green drooping needles. Here we found *Mammillaria perbella* (or near it) and *M. fuscata*. Also *Ferocactus latispinus* and *Ferocactus macrodiscus* with stout, recurved, yellowish spines and growing in lawn-like grass. The oak trees were covered with Spanish moss and thousands of small, white, woolly leaved bromeliads and some large vase-shaped species with reddish-tinged flower spikes. We arrive at Oaxaca and visit the market for purchase of staples and fruit. There was a lot of cheese all of it molded into white cakes. I found some skirts and shirts of hand-woven material, the cloth and designs were much the same as those we saw in Guatemala forty years ago. The cotton was dyed with cochineal which gives red, purple and black colors that are very enduring. Cochineal is made from the dried female bodies of a scale insect that attacks cacti in tropical and sub-tropical America. For orange and yellow, they use *cuscuta* or dodder, a parasite that grows on many types of trees. Some cottons are dyed green or grey and for these they use commercial dyes. We camp just outside of town.

Sept. 7. As we enter Mitla there are several shops where bright rebosas are sold. One had two young men and the grandmother of the family weaving bright wool rebosas under a thatched shed. To the right we entered a small room of the house where the Senora was weaving a light cream stole with wool much finer than the others and of lacy design. She and all her family were very friendly. I was shown how the wool was carded and the cochineal dye in the dry form. After visiting a short time, I took their pictures and am especially proud of one of the smiling grandmother. We continued on to the ruins, but before we can enter we are met by dozens of vendors of cheap jewelry. They insistently push their wares upon one. The ruins are fairly extensive, consisting of a few low, truncated pyramids on which churches have been built, and some large courtyards. We came across a very large *Opuntia* with flowers and buds trimming the pads. We are on our way now to Tehuantepec and the Isthmus. On the way we find a pretty white *Mammillaria* and two species of *Coryphantha*. We stop for lunch, the clouds rolling black above us. In the next valley we can see the rain drifting toward us. We continue on our way and suddenly are in a beautiful forest of large specimens of *Pachycereus pecten-aboriginum* with *Cephalocereus chrysacanthus*, *Lemaireocereus dumortierii* and *Escontria chiotilla*. The Rio Camerón, wide and muddy, appears below us.

Taffy-rooted fig trees cling to rocks, the roots coalescing wherever they touch.

Sept. 8. We all climbed the hills where we had camped the night and Pat found *Nyctocereus chontalensis* growing on top of the rocks. This curious cactus seems only to grow on top of rocks. We found none on the ground. The flower buds are bright red until they open in the evening the petals are pure white. There was a thin forest of pines and oaks. We found two handsome gesneriads, one with tall stems and a tuber 1½" diameter with red flowers, probably an *Iso-loma*. Another with single blue flowers and three or four leaves, and tiny, scaly rhizomes like an *Achimenes*. Twice during the day Harry and Slim went into the jungle. The going was rough as the undergrowth is tall and very thick and as the air is very still they find it extremely hot and humid. They are rewarded with the find of a tree *Pereskia* ranging from 20 to 30 feet high with 3"-4" spines on the trunk (*Pereskia konzattii*), *Platyopuntias* and tree *Nopaleas*. We arrived in Tehuantepec and had a refreshing cold drink in the shade. Some of the Tehuana women are very attractive and wear elaborate costumes; long skirts and blouses lavishly embroidered in floral designs. We went on a short distance toward Salina Cruz and stopping for gas and water, Harry and Slim were invited to join a merry party in the station. There was much laughter and incredulity with their answers to the questions they are plied with concerning every day matters in the States. We camped on the bay and quickly went in for a swim. The water was delightfully warm, with no waves, just short swells. We all slept uncomfortably, it being very warm and humid.

Sept. 9. Spent the early morning cleaning house and the rest of the morning in the market where we purchased baskets, papayas and mangoes. The latter were delicious. We stopped about 25 miles further at Juchitán. The market is quite large and very interesting. There were large chayotes, a single-seeded solid gourd, both white and green and very smooth, then both colors in a prickly variety. We took quite a few photographs as there were so many interesting subjects. One, a little girl had a small kettle in which she carried turtle eggs carefully wrapped in a serviette. There were large mounds of good looking pottery and pretty, woven hamacas. There were baskets of every shape and color and attractive tinware. I was interested in some candleholders to go with tin trees I used for Christmas decoration. We then took the Ismal road ascending till forest appeared. There were striking trees with smooth red trunks and many well branched, tall cerei. We could see many more with the binoculars and an occasional *Beaucarnea*. *Hylocereus* growing in the trees

often sent down long, liane-like branches. During the afternoon some beautiful green parrots flew squawking about us; they were disturbed by the presence of a large hawk. In the evening we could hear the parrots continuously as they flew in and out of the trees. Some hot springs near our camp made ideal bathing and the heat of the water took most of the sting out of the very annoying insect bites. A violent storm was exploding over the mountains to the south, the brilliant, jagged flashes lighting up the towering thunderheads. Later, the wind and rain hit our camp.

Sept. 10. Before we are ready to break camp, a heavy cart drawn by oxen came over the ridge and the friendly occupants exchanged greetings with us and obligingly kept the oxen still while we took pictures. Later down the road we saw some really large *Beaucarneas*, and many great trees of the white and yellow *Frangipani* (*Plumeria*). About noon we travel through groves of palms, some of them are host to a variety of plants such as ferns, split leaf philodendron, wild fig and frangipani. Also in one tree Harry found *Deamia testudo*, a curious climbing cactus. A few cornfields were hacked out of the low jungle trees. Most of this is probably second growth although here and there was a towering fig or silk cotton tree (*Bombax*). We turn off the main road to visit the interesting town of Matias Romero a town like many others, it however had a large station and a new market was in the making. About two miles further we stop to take a picture of a large tree, well branched, the upper limbs covered with orchids and then Harry drew our attention to a very large and beautiful specimen of *Selenicereus spinulosus*, stems were about 15 to 20 feet long. Large ferns grew below it, fronds of a maiden-hair fern measured more than two feet long and two feet wide. Also found an *Achimenes* with rose-purple flowers and *Monstera deliciosa* with huge perforated leaves two feet or more across. Also a fine *Philodendron* with deeply cut foliage. There were two climbing ferns apparently belonging to different genera. In the shrubs was a climbing *Bomarea*, an amaryllid with large umbels of pink blossoms. Further on we stopped in what appeared to be uncut jungle but within was a cafetal and here climbing in the trees were philodendron-like aroids with tri-lobed leaves. The ground was covered with two species of ferns and a myriad of sub-shrubs among which the coffee trees were struggling. Coming out of the forest we found a curious climbing *Aristolochia* with two and a half inch flowers looking exactly like a *stapelia* with lovely, banded grey and white blossoms. This curious small vine was covered with flowers and scabrous, heart-shaped leaves. We camped just outside of Acayucán in the state

of Vera Cruz.

Sept. 11. We stopped along the way to take pictures of Lago de Catemaco and went plant hunting. *Selenicereus coniflorus* and *Hylocereus* apparently *H. undatus* grew high in the palmettos. Crossing on a ferry over Olvarado Bay to the town of Alvarado, it was interesting to note the thousands of Water Hyacinths floating out to sea. *Acanthocereus* grew all around in the sand hills. Thousands of acres of shallow lakes had a species of white waterlily growing in profusion, large masses of hyacinths, water lettuce, a *Thalia* with forked flower spikes and a very pretty pickerel weed, *Pontederia*, with lavender pink flowers, much handsomer than cultivated species. Three palms were very common, the palmetto, the oil palm, *Attalea cohune*, with tall, smooth trunk and long pinnate leaves and a spiny, pinnate palm with large plum-like fruits. Mangoes and coconut palms were everywhere. Many of the large ficus trees and *bombax* were loaded with epiphytes; orchids, ferns, *anthuriums* (one with pendent clusters of brilliant red fruits), aroids, and great clusters of *Rhipsalis cassutha*. We arrive at Boca del Rio at the mouth of Rio Colaxtla. It is a very old town and Vera Cruz which we soon reach is the oldest of Mexico's colonial settlements. In its harbor are ships from many nations. We saw some Russian ships and Russian sailors in town. We had dinner at a sidewalk cafe just opposite the central plaza. There young men and girls promenade going around the plaza in opposite directions. There was much music and the weather was delightful. Vera Cruz has not been touched by the 20th century hustle and bustle.

Sept. 12. Our ambitious little friend, a boy of about 12 years, who had directed us around town the day before, directed us now to shops with beautiful shell and onyx ornaments. The country around Vera Cruz is flat, almost sea level. At noon we started our return via Orizaba. We began to climb and as elevations grew we saw large plantations of beautiful old mangoes. The trees were very large and densely clothed with shiny green leaves. The new growth flushed with pink always hangs limply down till mature. The newer plantations are properly set 40-60 feet apart. New orchards lined the road for miles. Huge old trees of ficus were filled to overflowing with epiphytes, mostly bromeliads and ferns, but sometimes we saw *Hylocereus* and *Rhipsalis*. Suddenly, there are many native houses and many flowers about each one. Hanging baskets of Burro Tail, *Sedum morganianum*, were common, we counted twelve on one porch. It must be the type locality for the plant. This is rain forest country, it is overcast and drizzling much of the time. Cordoba is a large town of 50,000 inhabitants and like many towns of Mexico is

growing fast with many new modern buildings. A little further on we come to the very charming town of Fortín de las Flores. Flowers abound everywhere, every cottage seems a bower of trees, shrubs and flowers. Hibiscus, crotons and roses seem to predominate. The others visit a nursery but a beautiful park is just across the way, so I walk over and see an exceptionally well kept plaza with flowers very numerous and lovely. There were some of our garden flowers and others I had never seen before. The nursery, one of a very few we saw on the trip, was very well stocked with different varieties of hibiscus, orchids, including cypripediums and dendrobiums which are not native, calatheas, marantas, rex begonias, white bougainvillea and numerous wild plants. Also several Echeverias just coming into bloom. The proprietress was well versed in the plants and knew them under their Latin names. The mountains about were thickly covered with rain forest—it must be a wonderful collecting ground for the plantsman. We wanted very much to go into the forest but that will have to wait for another time as our time for this trip is running low. Every house has one or more baskets of Burro Tail. In a short time we come to Orizaba and regretted that the mountains were still shrouded in cloud and mist as we could not see the famous peak, the highest in Mexico. The town is beautiful and well ordered, the streets paved and everyone is bustling about. To keep up with the increasing population, many modern buildings have been added. The town has now 80,000 inhabitants a good percentage having come within the last ten years. We went into a camera shop, as modern as any at home, and were able to get anything we needed for pictures. Shortly after Orizaba, we suddenly pass out of the rain forest and see a familiar sight: cacti and yuccas. It is very cold and drizzly and the grades are many and very steep and as it is getting dark we hope to get over the 10,000 foot pass before night settles on us. Half way up there is a lovely shrine, a cement enclosure the altar laden with flowers while a waterfall crashes down beside it. We stop to make hot tea and to view the valley below us. The road is dangerous because of the dense fogs which cloak the upper mountain slopes and the many sharp switch backs. We came into Tehuacan about 9 P.M. Elevation is approximately 5,000 feet.

Sept. 13. Slim visited a rock quarry and brought in a ton of beautiful onyx. Arrive in Mexico City at the Hotel El Presidente. The city is all astir with preparation for Sept. 16th, Independence Day. In various towns throughout the country we often saw pupils drilling in preparation for the day. They celebrate it like we used to the 4th of July until we civilized ourselves out of the fun.

Sept. 14. We investigated bus arrangements and costs, also Del Prado Hotel rates for the Convention.

Sept. 15. We had a very enjoyable time at dinner with Mr. and Mrs. Gold and Dr. Helia Bravo in one of the small restaurants near our hotel. Dr. Bravo is the cactus expert among the Mexican taxonomists. Later, about 10 P.M. we went to the airport to meet our youngest son who was flying in. Driving through the city of Mexico for the first time can be thrilling (and how!) and very interesting.

Sept. 16. It is the day of the big parade and celebrations in honor of Independence Day. Ethan and I obtained excellent seats where the view was perfect in a balcony of the Del Prado Hotel where we will hold the 1961 convention. The crowds were tremendous. We did not have long to wait before the parade began. Men of the various branches of the army, navy and air force were in resplendent uniforms while the mechanization for these forces marched by for two hours. We visited the Plaza Zocalo, on which the famous Cathedral and the Palacio Nacional face. Around the corner for a block, natives are cooking, pushing carts of ice cream and offering hickory nuts, pineapple and melons in chunks, seeds of boiled corn on the cob.

Sept. 17. Early Mr. Gold and Dr. Bravo called for us and we stopped for Mrs. Gold who had breakfast for us and Mr. Gold showed us his cactus collection. On our way to Cuernavaca, we took the new toll road. The day was bright and clear so we could view the beautiful countryside. The pass to Cuernavaca is about 10,000 feet. On a lava flow on the east side we found Echeveria gibbiflora, this was near the type locality. The plants grew on the rough lava with practically no soil. Habenaria (terrestrial orchid), a pretty rosy-purple Ipomoea, a curious Calochortus (Butterfly Tulip) with nodding wine purple flowers, Sedum fruticosum a very succulent shrub 2'-3' high, Pitcairnia with spikes of red flowers, three species of begonias one bearing a single leaf with tuber and two with tall upright spikes of pink flowers. There were masses of Hechtia. The slope was a not very old lava flow. At this point we got a splendid view of Popocatepetl, a beautiful snow covered cone glistening in the sun. We arrived at the lovely home of Mr. and Mrs. Castellá. They have a very nice collection of cacti, some quite large specimens. There were also many other rare plants one fern in particular was the finest we had ever seen, there were many very long fronds with hundreds of minute pinnae. At first glance we thought it was an asparagus. After a delicious luncheon of several native dishes we visited Mr. Cabrillo's garden. He is secretary of the Mexican Cactus Society and has a fine cactus collection and a very good

botanical garden of native trees and shrubs. A tree *Solanum* had large clusters 1½" purple flowers. The African Tulip Tree was beautiful with trusses of 4 inch scarlet blossoms terminating each branch. There was also a species of bay rum tree (*Pimento*). Later we visited the market; I never can resist the chance to visit them. There were lots of silver articles so we purchased some spoons and pins. We bid our hosts goodbye and returned to Mexico City. In the pass there was a driving, icy rain.

Sept. 18. We leave quite early and go over a pass of about 10,000 feet before we reach Pachuca. It is raining and cold. We arrive in the Valley of the Old Men and what a beautiful sight they are! Ethan was astounded to see the huge *Myrtillocactus* and *L. dumortierii* among them and in large numbers. We all climbed the hills about us and were delighted with the beauty of the individual plants. I took a full roll of film and started another in this valley. We saw thousands of large clumps of *Mammillaria geminispina*, a few *Mam. sempervivi*, *M. pygmaea*, *Dolichothele longimamma*, huge 5' tall *Echinocactus ingens*. At a small store where we purchased a few supplies I noted a patio a short distance away filled with plants and flowers. Introducing myself to the Señora she was very gracious as she granted my request to see them, among them was a very striking ivy geranium of which she gave me slips and later filled a bag with pecans, she refused payment but said "You may bring me new flowers when you come again". We went further down the valley and then, it being too late to reach camp before dark, we decide to stop for dinner at the edge of the village and a very friendly group of ladies watched our preparations with much amusement. When Harry turned the tables on them so to speak, by taking their pictures, they turned to run away but very quickly saw the humor of it and returned, whereupon the grandmother tapped me on the shoulder and said, "Senora, please come into my house". We all went in and sat down in the front room, they turned on a small radio and while we were conversing as best we could, they brought in a large platter of bananas. We feel humble at such hospitality and friendliness. Searching the hills again we find *Dolichothele longimamma*, *Coryphantha erecta*, a crest of *Astrophytum*, *Aloe vera* which is naturalized through out Mexico and of course there are Old Men everywhere. They seemed, however, to be on calcareous soils; wherever there was an overlay of lava *Lemaireocereus dumortii* and *Myrtillocactus geometrizans* took over. Some of the Old Men appeared to be 30 feet tall and usually in clusters of 5 or 6 stems. Ethan found one with a double cephalium. Many of the cephalia are black as though burnt. We camped for the night

in the upper valley with Old Men all about us.

Sept. 19. We start out in a drizzling rain with the mountains shrouded in mist. We stopped in Pachuca long enough to buy eggs and bread and then on the way again we found *Sedum amecamecanum* and the ever present *Castillejas*, and suddenly in a high valley there were many acres of wild, rose-pink cosmos in bloom. The road from Pachuca took us to Queretaro. We had stopped on the way at Colorado for instructions how to reach Cadereyta de las Montes as we planned to visit Willy Wagner, a cactus exporter.

Sept. 20. In the morning we went into Cadereyta and saw Mr. Wagner's son as Mr. Wagner was in Saltillo collecting. The town is in the center of many Pulque plantations. It is interesting to watch the natives prepare the agave plants for draining the miel. The plants are 8 to 10 feet across. A cavity is made at the base of the center cone, a stone is placed above the cavity, the sap starts to flow in a few hours. It is sucked out into a special long gourd and collected in jars but is generally carried to the market in a pigskin. It ferments in 3 to 5 days, has an odd sour taste somewhat like the sour wines of Europe but is milky white in color with foam on the top. It apparently forms a staple diet fresh or fermented. The soil in this area is thinly laid over limestone rock and yet we saw some good fields of corn. We leave Cadereyta and start north.

Sept. 23. We arrive at San Luis Potosi and after purchasing papayas at the market we start again for open country and soon run into hills we must investigate but one long slope takes a good part of the day, there are so many cacti, beautiful clusters of *Mammillaria candida*, *Ariocarpus furfuraceus*, *Gymnocactus saussieri*, *Pelecyphora valdeziana*, *Coryphantha*, several other *Mammillarias* one in large clusters, *Opuntias*, *Yuccas*, *Agaves* and a very pretty miniature phlox and a small bush *Bauhinia* with purple flowers. A little helper who appeared on the scene helped carry our plants down to the car. Further along we stop again and see *Echinocactus horizontalis* and *Ferocactus pringlei* which is certainly one of the most striking of cacti. It forms huge clusters to 5 feet tall, brilliant red in color. Large herds of goats often a hundred or more at a time pass by. Several times we saw butterflies in great numbers. At the next stopping place there are some small fuzzy *Mammillarias*, *Neolloydias* and groups of *Junipers* so lush and green they are lovely to behold. Another hillside was so thick with cacti it was difficult to avoid stepping on them. Two kinds of barrels grew large here and then there was *Tradescantia navicularis* and *Echinofossulocactus* (*Stenocactus*). We are entering a mountainous area and along the road for some distance they have planted red barrels

and yuccas. Could it be a thought toward conservation of this species as the valley was fast becoming farmland? The mountains were rugged and very beautiful and the strata showed evidence of great upheaval as it swirled in great patterns.

Sept. 24. We have passed through Saltillo and are approaching Terrell and at several places we found *Lophophora* in great compact clusters, *Thelocactus bicolor*, *Epithelantha micromeris*, *Hamatocactus hamatacanthus*, *Mammillaria riterriana* and *Astrophytum myriostigma coahuilensis*. North of Terrell there were some large, clustering *Echinocereus*, nice specimens, and the *Hamatocactus* again.

Sept. 25. Just as we are packed up and ready to leave we found a large, solitary, very heavily spined *Coryphantha* near Yermo. Later saw blue-leaved yuccas and *Dasyliroium*, found other plants,

Coryphantha, *Manfreda* and perhaps *Coryphantha texensis*, *Echinocereus caespitosus*, *Echinocactus horizonthalonius*, *Echinocereus pentelophus*. About noon we passed through Jimenez and arrived in Chihuahua mid-afternoon. Every place in town was closed as it was Sunday. It is quite a large place, 90,000 population.

Sept. 26. Going north we see very nice clumps of *Yucca radiosa* flourishing on sand dunes. With it was a small bush with handsome white blossoms and an *Abronia* with huge, winged, silvery-pink seed pods, and a dainty lavender daisy. We arrive in Juarez about 5 o'clock in the afternoon, too late to go through customs.

Sept. 27. We cross the border to El Paso and go through customs but we must wait all day while plants are being treated. We regret to leave this land that has held so much of enchantment and friendliness for us.

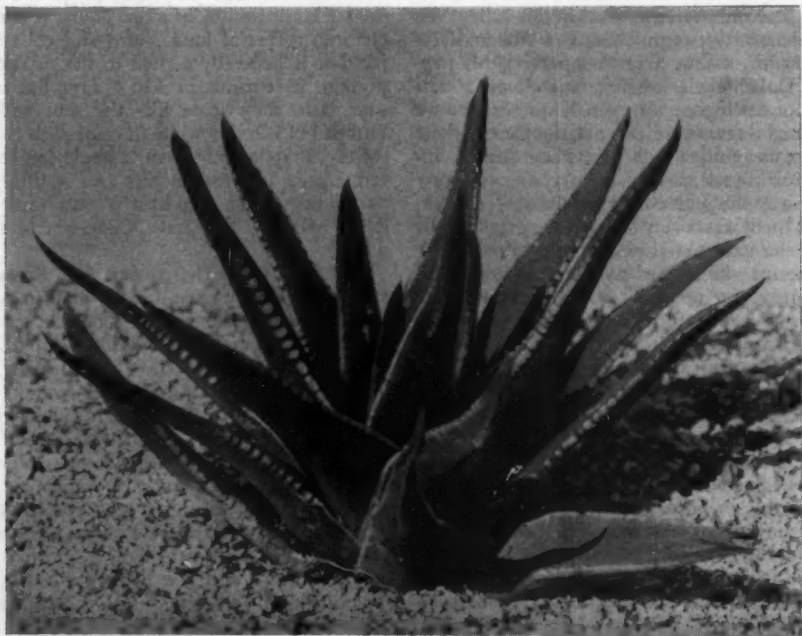


FIG. 42
Haworthia uitewaaliana Poelln. nat. size

Notes on *Haworthias*

J. R. BROWN

Haworthia uitewaaliana Poelln. in Cact. en Vetpl. V (1939) 115, fig. Zantner in Beitr. Sukk. u pfl. (1942) 19, fig. 7.

Plant stemless, simple or slowly proliferous from the base.

Leaves spirally arranged, erect, the older more

or less spreading, to 7 cm. long, 1.5-2 cm. broad towards the base, grey-green, dull, smooth, lightly incurved towards the tip, ovate-lanceolate, acuminate, and cuspidate: face of leaf lightly convex, back convex, with a blunt somewhat oblique keel from near the base or only towards

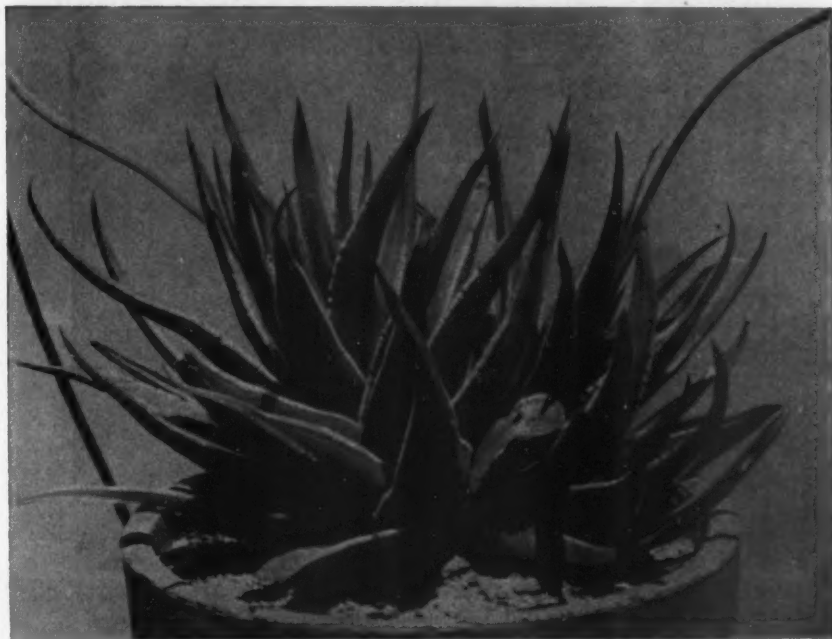


FIG. 43

Haworthia nitewaaliana Poelln. somewhat reduced

the tip: margins from near the base or from below mid-leaf with white, often irregularly distributed tubercles, sometimes slightly confluent on lower part near base, near the apex or at the apex only, with a narrow, continuous cartilaginous band, which is white later becoming greenish: keels with a similar margin and with similar tubercles, which are often more confluent.

Locality: Cape Province: 30 miles E. of Riversdale on stony hills, growing partly under bushes.

Named after A. J. A. Uitewaal of Amsterdam, Holland. A noted authority on the genus *Haworthia*.

A photo of an old clustered plant in the collection of Mr. J. W. Dodson is shown. This was taken many years ago and the plant at the time was 16 cm. in diam. and was collected in the Riversdale area of Cape Province. Another more recent photo shows a single offset from this plant in natural size. This plant agrees very accurately with the original description of *Haw. nitewaaliana*, however I have had several plants from So. Africa which showed considerable variation and were collected 6-7 miles S. of Heidelberg growing in the open in clayey soil and tending to cluster. One plant had several tubercles on the back of the leaves towards the base, another had leaves entirely smooth on the margins and only a very slight keel near the tip. We find the same

wide variation in *Haw. marginata* and it would seem that this *Haworthia* is probably only a variation of it.

It is quite attractive in its better forms as a single rosette by the glistening, more or less pellucid tubercles on the leaf margins. As a cluster the leaves become more or less falcate and have a tangled appearance.

FROM FLORIDA

The Florida Cactus and Succulent Society (formerly Mr. and Mrs.) has planted a cactus garden at the State TB Sanatorium, located at Tampa. Also, they had a most successful exhibit in the Florida State Fair, held in February. The President of the Society, and Beverly Hearne, former Treasurer, took more than twenty Blue Ribbons between them, on their plants; also \$45.00 in awards money—which they gave to their club.

EDITOR'S NOTE

Copy for the Journal should be typed in order to have it published promptly. Your cooperation will be a great help to your Editor.—S.E.H.

SUSTAINING MEMBERS

Mrs. Margaret Haynes, Rialto, Calif.; Herman F. Becker, New York, N. Y.; Edgar P. Sherman, Denver, Colo.

EXOTICA 2

One copy of this much-wanted, out of print edition, is available. Price \$38.00 postpaid. Abbey Garden Press, 132 W. Union St., Pasadena, California.



Fig. 44. *Agave cantala*. Right: rosette grown in the Huntington Botanical Garden, San Marino, Calif., approx. 1/12 natural size. Left: spine and teeth from same plant, slightly reduced.

CULTIVATED AND NATIVE AGAVES IN THE SOUTHWESTERN UNITED STATES

AUGUST J. BREITUNG

1416 S. Glendale Ave., Glendale, California

PART 14

SUBGENUS 2. EUAGAVE, Baker

SERIES 1. RIGIDAE, Berger

SUBSERIES 1. TEQUILANAE, Trelease

Agave cantala Roxb. Hort. Beng. 25, 1841.

Distribution: Mexico; perhaps Acapulco region.

Rosette 2 to 2.5 m. in diameter, stemless, stoloniferous; leaves 8 to 10 cm. wide, 1 to 1.3 m. long, linear-lanceolate, stiffly erect-spreading, shallowly concave, inrolled at tip, rather thin, leathery, grayish-green, spine small, 2 to 3 or 4 mm. wide, 5 to 7 or 10 mm. long, conical, short-grooved at base; teeth triangular, upcurved, 2 to 3 mm. long, 8 to 12 mm. apart, along a straight margin, inflorescence 4 to 6 m. high; scape with distant, rather small, triangular, appressed bracts; panicle oblong, occupying about one half of the length of scape, lower branches short, the middle ones longest, 6 to 8 dm. long; flowers 6 cm. long, greenish-yellow; capsules 2.5 cm. in diameter, 5 cm. long, short-beaked. July-Aug.

Agave pseudotequilana Trelease in Standley "Trees and Shrubs of Mexico," Cont. U.S. Nat. Herb. 23(1): 119, 1920.

Distribution: Mexico; Jalisco, type in the herbarium of the Missouri Botanical Garden from Tuxpan.

Rosette 1 to 1.2 m. in diameter; leaves 2 to 3 cm. broad, 6 to 6.5 dm. long, rather thin, flat, green, slightly glaucous and crossbanded; spine conical, 2 mm. wide, 8 mm. long, dark brown; teeth triangular upcurved, 4 to 5 mm. apart, 1 to 2 mm. long, the intervening cartilaginous margin nearly straight; flowers and fruit unknown.

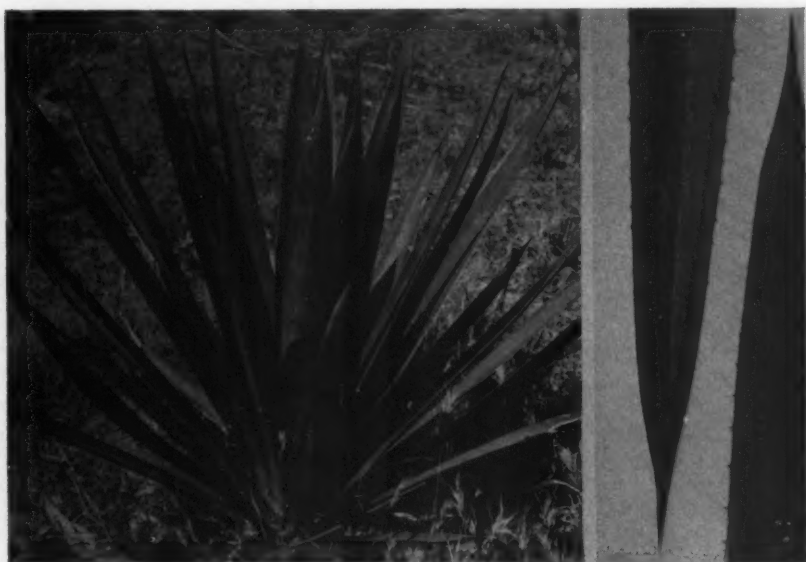


Fig. 45

Agave pseudotequilana. Left: rosette grown by Dr. Howard S. Gentry, Murrieta, Calif., approx. $\frac{1}{6}$ natural size. Right: terminal spine and small marginal teeth from same plant, slightly reduced.

Agave rubescens Salm-Dyck, Hortus Dyckianus, 8: 306, 1834.

Agave flaccida Salm-Dyck, Hortus Dyckianus, 8: 306, 1834.

Agave punctata Salm-Dyck, Hortus Dyckianus, 8: 306, 1834.

Distribution: Mexico; Puebla and Oaxaca; type cultivated in Europe without recorded locality.

Rosette 1 to 1.5 m. in diameter, stemless or nearly so, stoloniferous; leaves lanceolate, 7.5 dm. long, 5 cm. wide, rather thin and flexible, gray, tinged with purple; spine stout, 4 mm. wide, 25 mm. long, often broadly, shortly decurrent, dark brown becoming gray; teeth 10 to 20 mm. apart, 3 to 4 mm. long, very slender, upcurved, orange or brown, intervening margin translucent, nearly straight; inflorescence 3 m. high; flowers greenish-yellow; capsules accompanied by numerous bulbils. July-Aug.

Agave elongata Jacobi, Hamb. Gart. Zeit. 20: 501, 1864.

Agave spectabilis Tod. Hort. Panorm. 2: 4, 1879.

Distribution: Mexico; type cultivated in Europe without citation of locality.

Rosette 3 to 4 m. in diameter, stemless, stoloniferous, leaves lance-linear, acuminate, 5 to 8 cm. wide at the middle, 1 to 2.1 m. long, narrowing toward the biconvex base, becoming concave toward tip, glabrous, glaucous, somewhat green-banded across the back; spine 5 to 6 mm. wide, 20 to 30 mm. long, broadly grooved to flat-based, slightly decurrent, red-brown or purplish-brown; teeth 3 to 5 mm. long, 10 to 15 mm. apart, abruptly flexed forward, often parallel with the margin or sometimes s-shaped, the yellowish translucent margin nearly straight between them; inflorescence 3 to 4 m. high; panicle 6 to 8 dm. long, the lower branches about 3 dm. long, perianth greenish-yellow, segments 15 mm. long; capsules 25 to 30 mm. in diameter, 45 to 50 mm. long. June.

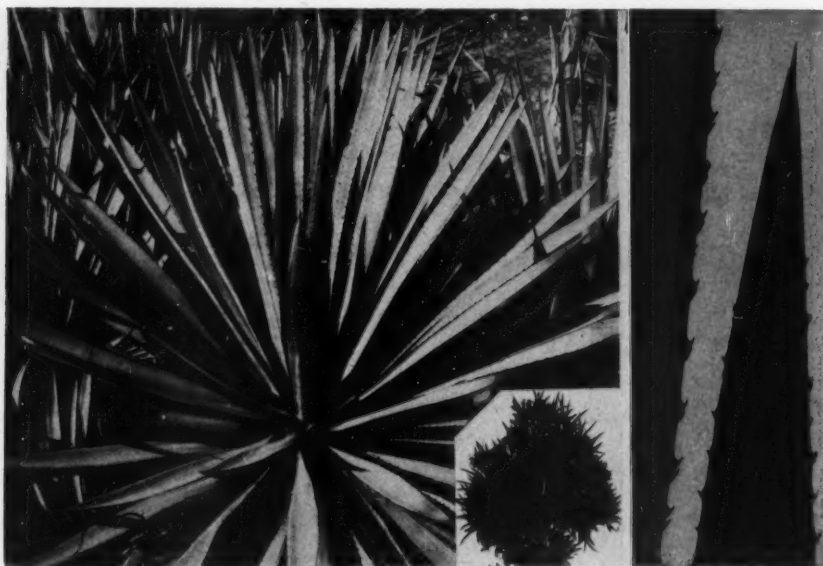


Fig. 46

Agave rubescens. Left: rosette grown in the Huntington Botanical Garden, San Marino, Calif., approx. $\frac{1}{8}$ natural size. Right: showing terminal portion of leaf and spine and portion from middle of leaf, about $\frac{1}{2}$ natural size. Inset: terminal portion of inflorescence showing numerous bulbils.

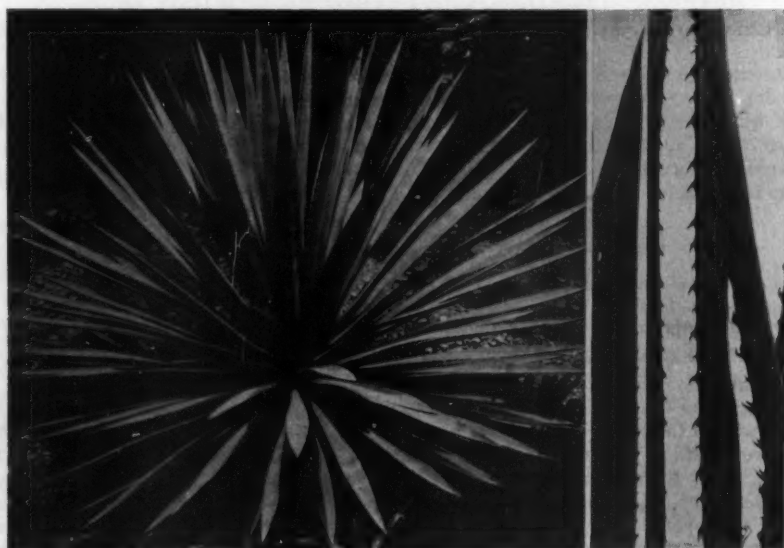


Fig. 47

Agave elongata. Left: rosette grown in the Huntington Botanical Garden, San Marino, Calif., approx. $\frac{1}{10}$ natural size. Right: spine and teeth from same plant, approx. $\frac{1}{2}$ natural size.



Fig. 48. Exhibit at the New York Flower Show.

THE NEW YORK CACTUS AND SUCCULENT SOCIETY

Visitors to New York's International Flower Show are accustomed to seeing the most beautiful gardens recreated for their enjoyment right in the very heart of Manhattan. But a Desert Garden is not a usual sight, not even in a city which boasts it has everything—or nearly everything. And so when the New York Cactus & Succulent Society exhibited its first such garden in last year's show it attracted considerable attention and won for us our first Gold Medal. This encouraged us to enter the 1961 show with plans for a far more beautiful garden.

This year our assigned space was 20 by 10 feet, open on all four sides, but with a four foot column interrupting one of the long sides and so we had to design our garden around the offending column. To disguise this column we planned a miniature hacienda built around it with a cactus garden to one side and a succulent garden on the other. To the front of the hacienda we laid out a formal garden separated from the cactus and succulent gardens by a semicircular walk. This gave us the effect of three gardens in one and from whatever side it was viewed a different vista could be had. The hacienda itself, with hanging baskets of stapelia species, *Corpuscularia lehmannii*, *Echinus edentulus*, *Crassula rupestris*, *C. reversi-setosa*, and *Graptopetalum macdougalii*, suspended from its rafters, added immensely to the charm of the garden. Built of hand made simulated adobe brick bonded to plywood panels it included a cheery red tiled roof. Both the design and construction of the hacienda were the work of our Joe Vilchek who has been named the best

(and probably the only) adobe brick maker in Brooklyn!

The cactus garden featured many of the plants we used in last year's garden, with the very woolly *Cephalocereus palmeri* arousing the most interest among the larger plants. Our very handsome *Echinocactus grusonii* and *Ferocactus pilosus* were very much admired not only for their size but for their unusually brilliant yellow and red spines. Many of our larger mammillarias were in bloom which seemed to surprise a great many visitors who somehow never associated flowers with cacti. After all, the only cacti that most easterners get to see are on their TV screens and some of these are artificial ones dreamed up by set designers who have never been west of 10th Avenue. In the succulent garden the most stately plants were the *Aeonium arboreum* and its variety *atropurpureum*. Several aloes in bloom and also *Echeveria pulvinata* and *leucotricha* as well as two different species of *Echeveria* Cass' hybrid in full flower provided striking accents of color. But the plant that elicited the most "oohs and ahs" was the little desert rose, *Trichodiadema densum*, afire with crimson blossoms.

The formal section of the garden was the real show-stopper. In the center we planted an oval shaped bed of different species of *echeveria*, six to be exact, plus *Pachyphytum compacta*, *Urbinia* red hybrid, each species in its own section curving out from the center which was filled with *Sedum pachyphyllum* hybrid—the tip of each leaf tinged with red. In all, 400 plants were used to complete this design. On either side of this

oval bed were mammillarias arranged in concentric quarter circles with a grouping of snowy white *Cephalocereus senilis* centering each of these two plantings. Contrasting bands of color were made by *Mammillarias compressa*, *rhodantha*, *elongata* and *collinsii* var. *tehuantepec*—another 400 plants went into these two beds. Powerful floodlighting accentuated the stunning colors and different leaf textures and helped maintain their brilliance throughout the 9 days of the show. The curved path that separated the formal garden from the cactus and succulent gardens was bordered with cinder block painted white to match the white gravel of the path. In the holes of the cinder blocks we planted *Sedum pachyphyllum*, *rubrotinctum*, *adolphii* hybrid, *treleasei* and *pachyphyllum* hybrid. These all retained their brilliant California sun-induced colors having been shipped in by air cargo just a few days prior to the opening of the show. Thanks must be given to the growers who took such pains to select for us their most show-worthy specimens and then shipped them to us on the dates promised. Through their co-operation we were able to display a most colorful and fresh looking garden.

With all the work that our Desert Garden entailed we did not neglect our usual information booth. This year the Flower Show decided to place the various plant societies' information booths right in among the benches where their particular amateur plant classes were displayed. This eliminated the necessity for each society to plan and build its own booth and made it much easier for the public to find us and ask their questions. As a result of an extensive campaign by our society the number of exhibits in the cactus and succulent classes far exceeded those in any other class. Prizes were too numerous to mention here with most of the awards in the cactus and succulent classes going to our own members. A new category was created for this year's show—a Plant Aristocrat Class—and it is

interesting to note that 1st, 2nd and 3rd prizes went to three of our members. First Prize to Arthur Garabrant for his perfect cluster of *Euphorbia susannae*; Second Prize to Ron-Dean Taffel for a massive *Euphorbia lactea cristata* and Third Prize to Simon Soskind for his elegantly graceful *Aloe plicatilis*. As a result of the excellent work done by the various plant societies in stimulating amateur exhibits at the show, the New York Horticultural Society, one of the co-sponsors of the International Flower Show, has promised us a freer hand in setting up exhibitors classes, in display and in judging. This should result in a greatly expanded amateur display area and a much more exciting show for next year.

We had the usual amount of daffy questions asked of us, but the one that really left us speechless was the one asked by a young man who wanted to know where he could buy an artificial cactus! We cannot help but notice the way interest in succulent plants has been mounting from year to year; last year we printed 1500 cultural information sheets and gave them free to anyone requesting them and at the end of the show we had used up only two thirds of them. This year we were permitted to make a small charge for educational material and so we ran off an attractive four page brochure and based on last year's experience we felt that 1000 would be ample. In the first three days of the show we sold them out completely at 5¢ a copy and had to rush through a reprint!

After five years of exhibiting at the International Flower Show and with two desert gardens to our credit with two Gold Medal Awards, are we satisfied? Well, next year we hope to double the size of our garden—twice as many headaches, twice as much work and twice as many backaches—but twice as much satisfaction.

JOSEPH EMMA, *President*

SPOTLIGHT ON ROUND ROBINS

I am pleased to note that Robins have been flying around quite well since the first of the year. Recently I thought to count how many I had had in three month's time and was surprised to find there had been forty Robins. Not all different, of course, because some go around faster than others and pass through my hands more often. Also during this time, lost Robins have been reorganized where the originals have disappeared and there is no hope of their return. These Robins include those on *Opuntias*, *Yuccas*, *Agaves* and *Aloes*, Hybridizer's and C. & S. Robin No. 9. A new Succulents Only Robin No. 2 has been placed in circuit with the minimum of members. I do hope some of you will decide to join this one which is chiefly for succulents other than cacti. It is open to three or four more members. A new International Mammillaria Robin is in the making also. I would welcome having four to round out its membership. The Small Cacti and Succulents Robin (formerly for mimicry succulents rather than covering the larger field) has need of more members because of the resignations of some of its members for various good reasons. Unless there are more of you who would like to join it and swell its tiny membership, it may be withdrawn from the Robins. Let me know soon, if you please. In other Robins there are these openings to fill: 1 member for the interesting Arranger's Robin; 2 members for *Yuccas*, *Agaves* and *Aloes* Robin; 3 members for *Euphorbia* Robin No. 1. If none of these seem to be what you are looking for, why not write me and tell me what you want. Perhaps others would like to join you in some special Robin. For the benefit of new members of our Society, may I say you are eligible to join a Robin if you are first a member of our C. & S.

Society of America. When you write please tell me a little about your plants and mention your membership in the Society. If I do not have the exact Robin of your choice your name is placed on my waiting list until such time as there are members enough to organize the Robin.

I am happy to welcome the following new members into our Robins: Mrs. Norman Heil, El Centro, California; Mrs. Leo Black, Chicago, Illinois; Mrs. Joyce L. Tate, Riverside, California; Mrs. C. K. Moltzen, Brownsville, Texas.

At this time, may my sincere thanks for the interesting newsletters sent to me and members of International Robin No. 3 go to Mr. Stanley C. Dedman, Hon. Secretary of the N.C.S. Society, Godalming Branch, Surrey, England, who is a member of this Robin.

Too, may I publicly thank all members who contributed stamps to me for help in defraying the cost of Robin correspondence. I appreciate your generosity and you may be sure these will be put to good use.

Among the Robins I have some notes of interest to *Euphorbia* collectors from Mrs. Ella Nipper in Illinois, who said, "As soon as a *Euphorbia* plant begins to turn yellow, leaves dry and drop off, it is usually a warning that soil is either too wet or too cold. Transplant or repot at once into fresh soil. Never fertilize any *Euphorbia* that is not showing new growth or already growing vigorously." She said in regard to grafting *Euphorbias*, "there are two main points to remember. The stock must be in growing condition, plump and firm. When you make the final cut on scion and stock, wipe the milky sap off with the edge of your knife blade and slap the two together quickly before more

sap forms. Get them together as dry as possible. Now place your graft in a cardboard box with about an inch size hole in the top of box. Set box in a darkened place until graft takes. It is very important to keep new Euphorbia grafts in a dark place until graft takes. At least it works best for me." (Taken from Euphorbia Robin No. 1).

Mildred Wellbaum, Director of Euphorbia Robin No. 2 says of her Euphorbias, "The yellow, pink and red E. splendens hybrids all are blooming and many of those in the greenhouse showing tiny red buds." She has no heat in the greenhouse so she is behind those who do, "but", she says, "everything looks pretty good". Irma Huch in Illinois wrote, "The only news I have is that E. pseudocactus may be going to bloom after all. My prodigrica didn't stay dormant long. It got new leaves right away after dropping the old ones. It has two now. It seems to want to be moist or leaves wilt same as E. nivula and loricata and the leaves on eupleurifolia sort of fold too when it is dry. I was afraid to give it too much moisture for fear it will rot, but I want it to grow so I water it from underneath so the roots get the water but the plant body stays dry. I have had good luck watering that way with plants that are a bit difficult." She added, "I know you all have read of the Climatraton at the Garden in St. Louis, so I'm sending a picture of it along." Inez Smith in Texas writes, "I have close to 100 Euphorbias. I have a greenhouse for my plants in the winter but come spring everything goes outside." She mentions a plant she received labeled E. canariensis describing what it looked like. To which Ruth Sunday in Oregon replied, "Inez, I'm sorry to say that whoever sold you a canariensis with three sides sold you a dud—as there just isn't any such beast. All true canariensis are four sided, they are not blue-green but bright green and in new growth they are pale green. Some time ago someone asked if mine ever bloomed. Not before, but this year it is and it is just lovely. It has the deepest maroon velvety bloom you ever saw, about three times as big but similar in design to the yellow ones of the pseudo type. Enclose pictures of my odd meloformis with its hundreds of pups and the crested ingens which is mottled purple most of the time. The ingens seedling Ruby sent me also has the purple coloring while my other two big plants, one mottled and the other not mottled, never have the slightest bit of purple on them at any time. In the same spot too, so it's not the sun. Irma, ingens belongs to the same group as similis but right there the similarity stops. Similis is twice as big with much deeper wings and no thorns." She added, "I have a first cousin who lives three blocks from the climatraton and she says it is marvelous."

Ruby McMahon in Texas, added a sad note when she said, "Lost my pteraneura. It was so pretty, had so many blooms and I wanted to be sure the seed matured and watered too much. Mildred, my abyssinica is twenty-eight and a half inches tall." Sarah Pomerantz in Pennsylvania wrote, "Irma, I water the Euphorbias from the bottom too. None have died but I have only nine different kinds. I have not yet had Euphorbia flowers, but have seen them only once and that on E. grandicornis last November in the greenhouse of the University of Pennsylvania. They have just built two new greenhouses but have Euphorbias etc. which must be years old as E. grandicornis and lactea are over five feet tall".

(Taken from the Winter-Hardy Cactus Robin No. 1)

In reference to Arizona laws on collecting cactus I have never heard of an arrest being made in the 15 years we have been here. If they enforce the law they'll have to build the largest prison on earth to hold them. I truly believe that 40% of the homes in Tucson have some cactus in their yards. I personally got mine by buying, trading, gifts, permission from ranchers and

helped myself on public lands. Does my conscience hurt me? Heck, no. Come take a ride with me and I'll show you miles of cactus bulldozed out to the side of the road and left to rot. Saguaro it took God 200 years to grow, destroyed in five minutes. It makes one sick. Legally one can't even take the ones bulldozed out. The state or county knowing they were going to put a road through could advertise in a daily paper telling the public to help themselves to plants on the right of way before they start the road, and I am sure thousands of cactus would be saved. See why I'm not bothered? We have a dealer that has a state permit (which is practically impossible to get) and he hauls cactus in by the truck load to sell. Why has he the right to make a living collecting them and another person isn't allowed to collect for his own garden. I have given away to others hundreds of plants. I have taken many pads of different Opuntias back to the desert and planted them. I have given away many thousands of seeds and in general I've helped the increase of cactus as much as possible. Yep! Law or no law, my conscience is Okey.

From Succulents Only Robin No. 1 I have taken a few notes. Victor Wright in British Columbia, Canada, wrote the latter part of January, "It is cold enough and the heaters are going full blast. In the greenhouse several Haworthias are in bloom and a Mam is doing its best to start a ring of flowers around its head. Several Crassulas are in bloom, as well as Sedums and an Echeveria or two, so the greenhouse is not too barren looking. . . . About the hardy Echeveria, it really is an Echeveria, since it has flowered. Although Echeverias are similar to Sempervivums, the size of the plant and the type of flower differ radically. By the way Sempervivums are much maligned by many people. I have a rockery outside with about thirty varieties and it was beautiful during the summer with its mass of starry blossoms on hairy stems about neat rosettes of leaves." Mildred Wellbaum from Oregon is also a member of this Robin and mentioned many of her lovely plants among them a number of Kalanchoes, Aloes, Cotyledons but she asks, "Have you ever had Aichryson variegata? It is a beautiful plant and reminds me of the variegated Portulacaria afra. Mine has been in the greenhouse in a small pot without water all winter and is in full leaf. I think the most interesting plant I have now is Echeveria subgrigida. Has been dry for months and has the most exquisite "bloom" on it. It almost looks like it was made of alabaster. I have also a rather large plant of Crassula Hummel's Sunset and the edge of the leaves right now are a fiery scarlet. This plant must be kept in the shade here or it will turn green." Wouldn't we all like to see Alta Tarango's "glorious spot of color" in her yard. She wrote, "I have an orange mesembrianthemum trying to outdo the sun. It is about two feet across and a solid mass of orange." Lois Covey, the Director of this Robin, wrote from Florida, "All of my plants have come out of their winter quarters in the garage and are back in the lath house for another year. Plant losses in the yard have been less than in recent years. Spring is here and everything is bursting with buds and bloom."

On that cheerful note I will end this news of the Robins on succulents. Don't forget to write to me if you want to join any of the Robins.

(Mrs.) GLADYS H. PANIS
P. O. Box 705,
Falmouth, Massachusetts

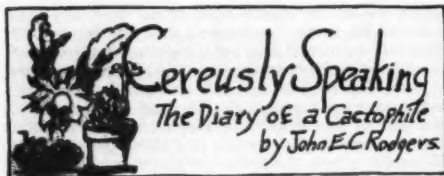
STAPELIEAE OF SOUTHERN AFRICA—White and Sloane

Descriptions and complete illustrations of 349 species. Cultural notes and a glossary. Three volumes of 1200 pages 7½ x 10½ in., 1250 illustrations with 39 in color. Cloth, \$13.25 per set. Some smoke damage.

SCOTT HASELTON

132 W. Union Street

Pasadena, California



Many of you are collectors of cacti that are native in your locality, so am I. I have been collecting *Opuntia compressa* since I first saw it growing wild on Tuffa Rock outcroppings near Castalia, Ohio, over 25 years ago. It was the wrinkled skin, round type of stem. The plant had a few bright yellow flowers without the usual brick-red base shading of the petals that I had found described in literature as *Opuntia opuntia*. The petals are ruffled and satiny. These against the blue to black-green wrinkled stems is a picture to remember.

I've collected plants from New England, south into Georgia, west to Arkansas, north to Minnesota and the Dakotas. Most of the flat stemmed types show that they are varieties of *Opuntia compressa*. Usually the Ohio type has few spines and insignificant spicules. Up to last summer I had heard of many varieties which were described as the same as the Ohio plant but when I got a cutting it was different.

While attending the Cactus Convention in St. Louis in July 1959, I was promised a cutting of *Opuntia compressa* that grew in slightly shaded forested areas near Richmond, Virginia. When it came it proved to be the same as the one I collected near Castalia, Ohio. (Page 62, *Cactaceae* by Marshall & Bock "*Opuntia compressa* Salis, is the type species which was first named by Linnaeus in 1753 from a plant collected in Virginia which he called *Cactus opuntia*"). I planted it in humus and bank sand composition soil. So after 25 years this variety has been found growing where the type species was collected but in totally different surroundings. There must be other localities that have this variety as well as Castalia, Ohio, and Richmond, Virginia.

When I talk to collectors, they invariably say "Opuntia compressa? It grows like a weed". I have some varieties that are vigorous growers, some that are slow growing and others that spread in strings, pad to pad, but never have I had any that grew like weeds. They cross pollenate when grow too close to each other. The seedlings show variety both in pad and flower but seldom do I find a pure yellow flowered one, which shows that pure yellow is recessive. I usually keep pads of each variety in the cool part of my greenhouse each winter to insure survival of the weaker ones. We have had four wet springs followed by dry summers and wet falls.

The *Pereskias* and *Pereskioopsis* that I own would take over the greenhouse if watered, kept warm and babied. I've circumvented their prolific habit by keeping them down to one drink a week while I've kept them close to the stove where the 45-55 degree night temperatures of the storage period are offset by the source of heat nearby. Some of them lose branches and some die back and some shrivel so that the bark of the stems cracks open. The branches that fall off can be re-rooted easily. These I use the same as I do the *Opuntia* pads for trading stock. Evidently the corking of the stems and the falling off to start new plants, along with the proliferating of the fruits in the *Pereskias*, *Pereskioopsis* and *Opuntias* are inherited from the ancestor of all cacti.

I have some *Pereskias* and *Pereskioopsis* that I have dwarfed and flower for me, to remind me that they do flower. I keep them near the stove, in good light and quite moist. It is the root room that is restricted. One

exception to my rigorous treatment for fast growing *Pereskias* is *P. corrugata*. It is one of the rarer types with orange-red flowers. Our friend Lad Cutak was the discoverer. It is unique with dark green, glossy leaves with raised areas between the veins giving it the name *corrugata*. My specimen plant is in a sunny window and has two 14-inch shoots and one two feet tall. It branches from near the ground much as *P. bleo* and makes a fine ornamental shrub for a large window. It starts to put out reddish green leaves in early January. The stems are soft when young and must be supported when tall. These stems turn into woody growth with spines at the leaf scars. It keeps its leaves, on the soft tissue, with my treatment.

My *Pereskioopsis* and *Pereskias* are deciduous—not by habit but by Rodgers. The single rose enthusiast would enjoy the flowers since they are similar to wild roses. To me they are beautiful and difficult to flower. I've seen *Pereskia bleo* in the botanical greenhouse in Washington, D.C., which was a many stemmed shrub in full flower.

The question is frequently asked if a plant misses its regular time of flowering, will it flower later in the season if given the treatment that produced flowers in the past. I've found that the likelihood of flowers is slight for most species but there are some that have the two-season flowering period. Some others may respond if the light, heat or coolness, water, air flow and retarded spring growth occurs. Some Orchid Cacti, Christmas Cacti, *Selenicereus*, *Lobivias*, *Echinopsis*, etc., are easily discouraged if left in the greenhouse but if set outside they respond with a few flowers at times. They are more or less difficult if not set in the right place at anytime. Avoid moving pots while plants are budded especially when buds are starting during mid February to mid March. If they are going to flower, the buds that were set during the previous growing season should have appeared just after the sun begins to come North again. I keep a record of: 1. buds appeared on such a date; 2. I did so and so; 3. plant flowered or didn't flower, etc. Keep records.

It is evident that seed-bearing plants must flower when they are old enough. The right age varies among even a batch of seedlings from the same fruit. I've had plants bought as blooming size so long as 15 years and the blooming plants haven't bloomed yet! Flowering may be due to chemicals in the soil or lack of chemicals but I am sure that there are sterile strains in cacti as well as in other forms of life. I have several *Gymnocalycium* which were flowering size when I bought them as 1½ inch seedlings; now they are 4 to 6 inches across and still grow a little each year. I have duplicates which bloom each year. It could be soils since *G. mihanovichii* takes a humus soil and *Aztekium ritteri* thrives in powdered slate.

Soils do vary from field to field and even from shovel full. Why not from inch to inch, both up and down and surface to surface? I'm still working on soils that help (or hinder) flowering. I always hope it will help to make my theories work.

PRICE INCREASE

EUPHORBIEAE OF SOUTHERN AFRICA

—White, Dyer, and Sloane

The 1100 illustrations give this scientific work a human interest that appeals to students of this group of succulent plants. There are 19 keys, full descriptions of 197 species, a glossary, bibliography, and cultural notes. This valuable contribution to the study of South African flora is scientific and yet readable for the layman. Another priceless set of books that will never again be published. The two volumes contain 1000 pages 7½ x 10½ in., 1100 illustrations, 26 color plates. Bound in Buckram, some smoke damage, \$15.00

ABBEE GARDEN PRESS

132 West Union Street

Pasadena 1, California



SPINE

CHATS

LADISLAV CUTAK



Curacao, that picturesque Dutch island off the coast of Venezuela in the Caribbean, will long remain in my memory as one of the most delightful places I have ever visited. But then every place I visit holds fascination for me! Curacao, however, was considered a stopping off place only as Colombia was my ultimate destination. KLM's "Flying Dutchman" deposited me in Barranquilla, we stayed at Hotel Central for a few days before departing for Tibu. During our stay in Barranquilla we met Prof. Armando Dugand, who led us on a field trip to the Juanmina region. This man is a real botanist and I only regret that I couldn't make more trips with him. What a pleasure it is to be in the company of a learned man! He knew every plant that grew by the wayside. I must admit that some of the plants we saw were the first ones I had come in contact with. Colombia is rich in plants that one never sees in cultivation. We hope to introduce some of them and the Climatron at our Garden is to be the trial ground.

The Sandbox Tree, *Hura crepitans*, was one of the conspicuous trees encountered. This picturesque tree has a huge trunk which is covered with hard vicious out-size prickles and it bears yellowish pumpkin-like fruits which explode when ripe, using this method to scatter its seeds. The Hura is a relative of the spurges and could easily be grown and included in a xerophyte collection. This interesting tree belongs to the primeval forests and many specimens have been destroyed through man's greed to establish cultivated areas. In the short thorn thickets we saw *Pedilanthus tithymaloides*, a slipper spurge, often cultivated in private collections as the stems are frequently employed by ladies in artistic flower arrangements. *Pedilanthus* is a genus entirely American and wholly succulent.

The tree-like *Pilocereus russeliensis* was also observed in the area and frequently its stems were nearly completely covered by a Leguminous vine, *Bauhinia glabra*. Often only its spiny heads were free of vine verdure. Walking in the thorn thicket wasn't a pleasant task. Thorny stems tore at our flesh and clothing and one had to be doubly careful so as to avoid swishing branches from our faces. Stinging ants were everywhere and some found refuge in hollowed thorns of the Bullhorn Acacia. A milkweed, *Calotropis procera*, is a distinct plant with silvery-haired foliage common in and around Barranquilla. Strangely this is not a native plant although it appears to be. It was introduced by the negro slaves in the olden days and apparently had some medicinal or fetish value.

My headquarters at Tibu was situated a few miles from the town itself. It is near the Tibu River where the jungle creeps to the river's edge on both sides. Many interesting plants grow in its dark interior. A few bromeliads, particularly *Billbergia macrolepis*, were high in the trees and there I also noticed long streamers of *Wittia panamensis*. The latter is an epiphytic branching cactus with much flattened stems, that produce an abundance of purplish blossoms. The flowers appear singly at areoles and are about an inch and a half long and quite showy. Around Tibu I also noticed a *Rhipsalis* high in the trees but was unable to procure specimens for identification.

During my stay in Tibu I made daily trips to surrounding areas, plunging deep into forests that line the oil company's roads. Some of these roads are kept in repair but others that have been abandoned are

treacherous when it rains. Such was the trip to Las Mercedes. We had started out one early morning and had to give up after negotiating some twenty miles in about two hours. The road was a quagmire of slippery ooze and after getting stuck on several occasions decided against completing the trip. Two weeks later we made another attempt and this time were successful. Another exciting trip took us along the pipeline road which meanders to La Gloria on the Magdalena River. This road passes through the country of the savage Motilone Indians, who occasionally shoot their arrows at intruders. Only a week prior to my coming a small group attacked a company truck making inspections in the pipeline but fortunately there were no casualties. Seven wooden arrows were retrieved from the truck and one of them was given to me as a souvenir.

My trips in Colombia were chiefly to jungle areas but I saw some desert scenery around Cucuta, which is located in east central Colombia and also around Pasto in the southwest. The Cucuta region reminded me of Texas with denuded hillsides overgrown with flat-jointed *Opuntias*. *Acanthocereus* grew in scattered patches and there was also a *Cereus*-type cactus in evidence, mostly seen from the bus. I had planned to botanize in the area but several unforeseen problems had come up and prevented me from fulfilling this wish. The region around Pasto is very mountainous and occasional Prickly Pears and a *Choya* were noticed. Here one also sees *Furcraea gigantea*, frequently cultivated for the fiber contained in its leaves. The fiber was hung over fencing to dry, later dyed, and then twisted into twine or used in weaving coarse bags. Huge trunks of *Puya* grew on the hillsides, many of them scarred by fire. *Puya* is a very prickly plant found at higher altitudes and reminiscent of the pineapple to which it is allied. *Pitcairnia*s were also prevalent, often growing on the steep slopes and hard to get to. South of Pasto, around Km. 40, we encountered a dry mountainslope overgrown with another *Cereus*-type cactus which I haven't identified as yet. Spanish Moss draped the cactus and it also clung to the rocky outcrops. A succulent *Peperomia* grew in the rocky soil and there was also a succulent Crassulaceous plant found growing between the loose rubble.

I have always been intrigued with *Paramos* and Colombia has its share of them. *Paramo* is best described as a region located just above the tree line and below the zone of perpetual snow. It is a windy cold, rain and sleet soaked terrain inhospitable for living but rich in flora different from lower slopes. Sphagnum moss covers the ground and one sloshes in moisture constantly. Whatever is touched—trunk, branch or rock—is covered with spongy moss dripping water. *Puyas* and *Greigias* often grow in the sphagnum and there are also many dwarf wildflowers. A cycad-like tree fern is prominent and its moisture-laden fibrous trunk is host to many epiphytes. Most of the *paramo* plants possess a leathery feel to its foliage. This, no doubt, is a protection against the biting cold winds which blow constantly. Although a great number of plants grow in the *paramos*, none are more pronounced than the *Espeletias* which give the region its Martian-like look. *Espeletias* are members of the daisy family although one would never guess it by looking at the plants. Individual specimens attain a height of ten feet and its long, large leaves are very hairy and soft to the touch. The *Espeletias* are the characteristic plants of the *paramo*, giving it an out-of-this-world aspect.

COLLECTIONS OF MEXICAN CACTI

Send for prices
Satisfaction guaranteed
LA QUINTA—F. SCHMOLL
 Cadereyta des Montes, Gro., Mexico

SUCCULENTS — 400 VARIETIES

Write for map of location

LILA'S NURSERY
 4 Altana St.
 San Rafael, California
 Glenwood 3-8553

GATES CACTUS, INC.

Nursery grown Cactus and Succulents. Beautiful Nursery grown seedlings and rooted cuts. Write for free 1961-62 illustrated catalog.

GATES CACTUS, INC.
 2514 Hillside Ave., Norco, Calif.

CACTI FOR SALE
(Private Collection)

Many show plants. No price-list. Sundays and local sales only.

CHARLES REDLER
 8913 Ashcroft West Hollywood CR. 1-6681

FREE CACTUS SEED LIST
(Over 100 varieties)

AUNT PAT
 Route 3, Box 440 Edinburg, Texas

PRICE LIST—OVER 200 VARIETIES

Illustrated. Free for the asking. Finest nursery grown plants, including seedlings from Africa, Mexico, and other parts of the world. Some specimen imports and recently collected items.

JUDY'S CACTUS GARDEN
 Dept. C5, Rt. 2, Box 216-A, Fallbrook, California

GO TO MEXICO CITY THROUGH LAREDO, TEXAS

Laredo, Texas, is the Mexican border's main port of entry. While there you are invited to visit one of this country's oldest cactus gardens, started in 1928, known then as Shiner Cactus Nursery but now simply as Cactus Gardens, and run by its original owner, now Mrs. A. L. Jones.

Cactus Gardens in Laredo includes a Cafe and a Museum of Mexican antiquities, including hundreds of pre-Columbian figurines and pieces of ancient pottery. It is located on the main highways, 81, 83 and 59 in the midst of the tourist courts. Visitors always welcome.

WANTED
BOOKS ON CACTI
 New or used. List title and price
RICHARD RUSSELL

125 East 93 Street Nw York City 28, N.Y.

TEXAS COLLECTION

Color for your garden all summer—One each, *large* blooming size, *Acanthocereus pentagonus*, *Astrophytum asterias*, *Coryphantha runyonii*, *Hamatocactus setispinus*, *Lophophora williamsii*, *Thelocactus bicolor*—all for \$5.00 postage paid.

Write for complete list and descriptions.

HELEN'S CACTUS

2205 Mirasol

Brownsville, Texas

THE U.C. SOIL MIX

For growing seeds, cuttings, plants of Cacti and other succulents. One package of minerals, with complete instructions, for use in preparing 16 gallons of soil mix sent prepaid for \$1.25. Send self-addressed envelope for further information.

INTERNATIONAL SUCCULENT INSTITUTE, INC.

921 Murchison Dr., Millbrae, California

SOMETHING DIFFERENT IN CACTUS CATALOGS

Everything completely illustrated with photographs. Also brief descriptions, cultural hints, habitat and other pertinent information on each item offered. Many seed-grown Texas species plus others from all over the cactus region.

Price 35¢, deductible from first order

EL PASO CACTUS GARDENS
(Owner: Clark Champie)

P.O. Box 133 Anthony New Mexico-Texas
 All photographs and descriptions by Clark Champie. Supplements will follow from time to time and they may be inserted in the original binding.

SPRING SPECIALS

Lobivia binghamiana—Red flowered—
 nice clusters 3 to 4 in. \$1.50
Mam. bombycina—Atom Bomb, 2½ to 3½ in.
 specimens—Special 2.00
Mam. dealbata—beautiful Mexican imports—
 3 to 5 in. 2.00
Mam. tetracantha—Ruby Pin Cushion,
 beautiful—5 to 6 in. 1.50
Lobivia aurea—Golden Easter Lily,
 nice 2½ to 3 in. plants. 1.00
Mam. compressa—Mother of Hundreds,
 large 4 to 6 in. specimens, imported 2.00
Euphorbia lanata—Cotton Pole, large,
 white, 5 to 7 in. plants. 2.50
Oreocereus trollii—South American, rare,
 2½ to 3½ in. specimens. 4.00
Oreocereus celsianus—Bolivian Old Man, rare. . 2.50
Astrophytum asterias—Sand Dollar,
 2½ to 3½ in. flowering plants. 2.50
SPECIAL OFFER—1 each of above at special price of
 \$20.00 Postpaid
 Cash or Check—Minimum order \$4.00

ROCKING HORSE CACTUS GARDENS

"Arizona's Largest"

2415 West Glenrosa, Phoenix, Arizona

EPIPHYLLUMS

100 named varieties of rooted cuttings, 65¢ each or 10 for \$5.00. Cuttings not rooted, 50¢ each, 12 for \$5.00. Un-named rooted cuttings 25¢ each, 25 for \$5.00. Adult plants from \$3.50 to \$17.50 each. Cacti, Yuccas, Agaves, and Aloes.

A. HUGH DIAL

7685 Deer Trail

Yucca Valley

California

